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## A new Species of Listera, with Notes on other Orchids.

By Thomas Morong.

Listera borealis, n. sp.—Stems very delicate, 3′-5′ high, glabrous below, glandular pubescent and with long, silky, scattered hairs among the inflorescence, sheathed by 2 obtuse, membranous scales at the base; roots thickened, somewhat fleshy; leaves oval, slightly sheathing, obtuse at the apex, 4″-8″ long, 2″-4″ broad, entire, bearing on the surface a few silky hairs, otherwise very glabrous. Raceme 2 or 3 flowered. Bracts scarcely 1″ long, much shorter than the pedicels. Sepals and petals nearly equal, linear, obtuse, about 2″ long. Lip 4″-5″ long, 2″ broad at the obtuse apex, ciliolate above; apical lobes very obtuse, 1″ long, the intermediate tooth obsolete; basal lobes ½″ long, very obtuse. Column slightly incurved, 1½″ long. Flowers greenish-yellow, the lip with a purplish middle, and purplish nerves radiating into the apical lobes. The flowers and column, as well as the leaves and upper stem bear the silky hairs mentioned, some of which are 2″ long.

Collected by Miss E. Taylor at Fort Smith, Slave River, Hudson Bay Territory, June 28, 1892.

### Self-fertilization.

Darwin seems inclined to think, if he does not absolutely assert, that all orchids are unable to fertilize themselves, and that appears to be the prevalent view to-day. That insect agency is imperatively needed in many cases is doubtless true. The structure of the floral organs in a large number of species is such that it is clearly impossible for the pollen to reach its own stigma without artificial aid. The rostellum often very effectually interposes between the anther cells and the stigmatic cavity. There is, however, more than one species in which the means of self-fertilization are

provided, and plenty of proof that this does take place. The plants have two strings to their bow, and one or both may be used as a means of securing offspring, as in many *Naiadaceæ* both propagating buds and seeds are produced, so that if one method fails the other may be employed. It is not always true that the pollen is so firmly agglutinated that its grains can be separated only by a considerable force. In *Leptorchis*, for instance, the pollen masses are very loosely granular, without caudicles, glands or connecting threads, and the grains are easily detached by the wind or rain, and therefore liable to be conveyed to their own stigma by such agitation. What serves to show that in this genus self-fertilization is common is the fact that our two species produce an abundance of ripe capsules which is not generally true in other genera where insect agency is absolutely necessary. *L. liliifolia* frequently occurs in our Northern woods and nearly every plant that I have collected in the latter part of the season is well furnished with fruit. This is equally the case with the several species of *Achroanthes*. In several of the genera which are destitute of caudicles and glands, I have had occasion to observe the pollen dust scattered over the lip, column and stigma precisely as I have seen the pollen of willows scattered over the inflorescence, suggesting an analogous distribution. Another very interesting method of self-fertilization is related by Sir Jos. Hooker in a paper which he read before the Royal Society of London, in 1854. The plant which he has under review, is *Listera ovata*, a British species very like our *L. cordata*. He found that if the rostellum is touched or irritated when the pollen is ripe a sort of explosion occurs and two white viscid masses are instantly protruded, one from each side of the apex, which coalesce and attach themselves to the bases of the pollinia, and draw them out of their cases. The pollen, he says, is by this means broken up, and the grains fall over the edge of the rostellum upon the stigmatic surface. Here is a case which, while not at all preventing the plant from being fertilized in the ordinary way by insects, clearly shows that the means of self-fertilization is specially provided for. Now in the allied genera, *Gyrostachys*, *Peramium*, *Epipactis*, *Cathea*, *Arethusa* and *Pogonia*, while no irritability of this kind has so far been observed, yet the caudicular discs are attached so firmly to the back

of the rostellum that by bending it downwards the pollinia are drawn out of their cases and broken up. Supposing an insect crawling upon the rostellum or any other weight to perform this act, some of the pollen grains are pretty sure to be thrown upon their own stigmas. In the three first mentioned of these genera, at least, we find the species maturing an abundance of fruit, which in a measure confirms the idea that self-fertilization often takes place. But there is stronger evidence of the fact of self-fertilization in several species of *Habenaria*. In *H. tridentata*, the rostellum, instead of being as in most species of *Habenaria*, a solid shield interposing between the anther cells and a deep stigmatic cavity lying far underneath, is split into three club-shaped columns, standing one on each side of the cells and one between them, rising to a level with the cells. The upper and inner surfaces of the two lateral columns are viscid and evidently stigmatic. The pollen is powdery and within easy reach of these contiguous stigmas. Curiously enough, too, when the anther cells dehisce, these stigmatic columns contract on their inner side, and may be said actually to lean over and help themselves to the pollen. As a matter of fact the columns are known often to be penetrated even in the unopened flower by pollen tubes (Gray's Man. Ed. 6, page 506), and they have been found still more common in the mature flower. This structure occurs to a greater or less degree in the allied species, *H. integra* and *H. nivea*. With such facts as these before us, we should be cautious how we limit all Orchidaceous species to a single mode of fertilization.

**Nomenclature.**

*Calopogon*, R. Br. in Ait. Hort. Kew. Ed. 2, v. 204 (1813).

This name is antedated by *Cathea*, Salisbury in Trans. Hort. Soc. i. 300 (1812), and by *Limodorum*, L. Gen. Pl. Ed. 2, 829 (1742), as well as by *Helleborine*, Martyn (1736). Kuntze, Revisio Generum Plantarum, 665, adopts the last name as having the right of priority, but, taking as our starting point in nomenclature, the first edition of Linnæus' Species Plantarum, 1753, we cannot follow him. *Limodorum* must be dropped also, because Ludwig (Definitiones Generum Plantarum, 1737) had anticipated the Linnæan name of 1742 by adopting *Limodorum* from Tournefort, in application to a different genus from that of Linnæus. Therefore, we must drop

both *Calopogon* and *Limodorum* and apply Salisbury's name to the Northern species, which will accordingly stand as follows:

CATHEA TUBEROSA (L.).

*Limodorum tuberosum*, L. Sp. Pl. 950 (1753).

*Cathea pulchella*. Salisb. Trans. Hort. Soc. i. 300 (1812).

*Calopogon pulchellus*, R. Br. in Ait. Hort. Kew. Ed. 2, v., 204 (1813), and later authors.

*Listera*, R. Br.—Kuntze has adopted Rafinesque's name "*Diphyllum*" as anterior to *Listera*. The word originally misspelled "*Diphryllum*," and several times subsequently in Rafinesque's published writings, Kuntze seems to think should be retained in this form on that account, but Rafinesque himself spells it correctly in his "*Herbarium Rafinesquianum*," and there seems to be no good reason why an evident misspelling should not be corrected. It is, however, inadmissible as a substitute for *Listera*, as the description given by Rafinesque in Rep. N. Y. Med. Repos., 2nd Hexade v., 357, (1808), clearly shows. He speakes of his plant as having "2 interior petals . . . bifid; lip acute, *entire*; *capsule filiform*," which is entirely inapplicable to any of our published species. There is preserved in the library of the New York Academy of Science a curious old volume of proof plates of various species drawn by Rafinesque, among which is a drawing of this plant, the figure of which corresponds exactly to the author's description. What plant was meant it is impossible to say, but it is evidently not a species of our *Listera*. Consequently the name of Brown holds good.

*Spiranthes*, Richard, 1818, must give way to *Gyrostachys* of Persoon, 1807, as has been well shown by Kuntze, and our species known as *Spiranthes* should be classed under the older name.

Probably Kuntze is also correct in displacing *Liparis*, Richard 1818, by *Leptorchis*, Du Petit-Thouars, 1809, but I have not been able to get hold of the work cited by Kuntze (Nouv. Bull. Soc. Phil. 314-19) and cannot verify his date.

*Goodyera* R. Br. (1813) is antedated by *Orchiodes*, Siegesbeck, 1737 (Supp. 13) and by *Peramium* of Salisbury (Trans. Hort. Soc. i. 301) 1812. Under our rules *Peramium* must be substituted for *Goodyera*.

*Epipactis*.—The history of this name is a curious one, showing

how tangled is the synonymy when we come to search for priority. Kuntze in the volume already referred to cites Ludwig's name *Limodorum* as the original under his system of nomenclature, but that acute author has made a palpable mistake, for Ludwig adopts the name from Tournefort and a reference to Tournefort's description and figure shows very clearly that he means a spurred plant belonging to the genus *Orchis*, and Ludwig himself (Def. Gen. Pl. Ed 2, 213) describes it as having a spur, which *Epipactis* has not. Linnæus in his description of *Orchis*, Gen. Pl. n. 681, correctly cites Tournefort's *Limodorum* as the same as his *Orchis*. Linnæus' *Serapias* (Gen. Pl. n. 683), which equals *Helleborine*, Tournefort, included several genera, among them our *Epipactis*, the original name being retained by Bentham and Hooker for several Mediterranean species. Haller in 1742 (Enum. Stirp. i. 277) constituted the genus *Epipactis*, followed by Crantz in 1769, Allioni in 1785, and others. Richard afterwards still farther divided the genus, calling the plants without glands *Cephalanthera*. So that we have the three genera, *Serapias*, *Epipactis* and *Cephalanthera*, each of them legitimately applied to the species now bearing those names.

The species of *Epipactis* occurring in Northeastern North America, should be designated as follows:

E. VIRIDIFLORA (Hoff.)

*Serapias viridiflora*, Hoff. Deutsch. Fl. ii. 182 (1800).

*E. latifolia*, var. *viridiflora*, Irm. in Linnæa xvi., 451 (1842).

*E. virdiflora*, Reich. Fl. Exc. 134 (1830).

*E. Helleborine*, var. *viridens*, Asa Gray, Bot. Gaz. iv. 206 (1879).

*E. Helleborine*, A. Gray, Man. Ed. 6, 504, (1890) not Crantz.

Dr. Gray in the volume of the Botanical Gazette referred to, noticing the recent discovery of the plant at Syracuse, New York, states that it is "exactly the *E. viridiflora* of Reichenbach, well figured in the Icones Floræ Germanicæ which peculiar as it seems to be, is reduced by Irmisch to a variety of *E. Helleborine*." Singularly enough, he at the same time adopts Crantz' varietal name (*E. Helleborine*, var. *viridans*.) Probably this was because he regarded the plant as essentially equivalent to the *E. latifolia* of Europe, which Linnæus had named *Serapias Helleborine*, var. *latifolia*, but the two are quite dissimilar, and Reichenbach had good reason for separating them. Our plant differs from that in having narrower,

longer and more tapering sepals, a lip destitute of tubercles or callosities or lobes on either the upper or lower part, all of which characters occur in the European *E. latifolia*. So decided is the difference upon close inspection that I have no hesitation in following Reichenbach and adopting Hoffman's name, *E. viridiflora*, notwithstanding the fact that the specific name is not well chosen to indicate the color of the flowers.

Three stations are now known for this plant. In addition to those near Syracuse and at Buffalo New York, another has recently been found at Toronto, Canada.

*Microstylis*.—Nuttall's section of *Malaxis* known under this name, as has been shown by Prof. Greene, is antedated by Rafinesque's name, *Achroanthes*, and our Northern North American forms become:

A. MONOPHYLLA (L.), Greene, Pitt. ii., 183 (1891).
*Ophrys monophylla*, L. Sp. Pl. 947 (1753).
*Microstylis monophylla*, Lindl. Bot. Reg. t. 1290 (1829).
A. UNIFOLIA (Mx.), Raf. Med. Rep. 2d Hex. v. 352 (1808).
*Malaxis unifolia*, Mx. Fl. ii. 157 (1803).
*Microstylis ophioglossoides*, Nutt. Gen. ii. 196 (1818).

*Habenaria ciliaris* and *H. blephariglottis*.—So far as I can see, the specific difference between these two forms can hardly be maintained. According to Michaux, who seems to have been the first to mention the white colored plant, it is merely a white variety of *H. ciliaris*, and this judgment appears correct. Dr. Asa Gray, in the Annals of the Lyceum of Natural History of New York, iii., 231, says that the two species "grow in similar situations and frequently in company, and are not readily distinguished except by the color of the flowers. But, as Prof. Hooker justly remarks in *H. ciliaris*, the lip is more thickly fringed, and the upper petals are likewise fringed; whereas in *H. blephariglottis* these are quite naked." Numerous specimens of the two species in the Columbia College Herbarium show that the lip varies in both species from loosely to thickly fringed, and is the same identically in shape. If it were the fact that in the one the petals are fringed and in the other not, that might serve to distinguish them, but it is now well known that the petal of *blephariglottis* are commonly as much fringed as in *ciliaris*. It is only in *blephariglottis* var.

*holopetala*, Torr., that the petals are entire, and I find many specimens of this species which show on the same plant all grades of petals from entire to cut-toothed and fringed. So that no dependence can be placed on the constancy of this character.

The very confusion into which authors have fallen in regard to these two species is significant. Willdenow, the author of the name *blephariglottis* (Sp. Pl. iv. 9, 1805), observes "very similar to *ciliaris*, but the narrow lip, the length of the highest petal and slightly ciliate. The corolla seems to be yellow." Dr. Torrey, in his Compendium of 1826, briefly describes them, and the description of either applies perfectly well to the other, except that the one is called "bright yellow" and the other "pure white." Hooker (Exot. Bot. t. 87), calls the var. *holopetala* "*Habenaria blephariglottis*," and Lindley names it "*Platanthera holopetala*," upon which Torrey (Fl., N. Y., ii. 277), who gives altogether the best description of the two species, remarks: "I certainly agree with Sir William Hooker in considering *P. holopetala* of Lindley as only a variety of this (*blephariglottis*) species, which again scarcely differs from the following (*ciliaris*) except in the white flowers. Lindley has even a white variety of *P. ciliaris*." Chapman reduces it to *H. ciliaris*, var. *blephariglottis*.

Lindley, in his Gen. and Sp. of Orchids, seems to have mixed matters badly, evidently knowing the species imperfectly. After converting *Orchis blephariglottis*, Willd., into *Platanthera holopetala*, he describes *Platanthera ciliaris* under two varieties, viz., var. *α.* with yellow flowers, which he attributes to Alabama, and var. *β*, with white flowers, which he attributes to Canada. It is to this that Torrey refers. Lindley could distinguish his *holopetala* from *ciliaris* only by its entire petals, which, as I have shown, is an inconstant character. So far as color goes, even if color alone were a sufficient ground for specific distinction, which it is not, I find in the Herbarium on sheets of undoubted *blephariglottis* labels from different collectors marked, "flowers, lemon yellow," and "flowers, lemon yellow, varying to *ciliaris*."

A careful comparison of the flowers in the two forms, as shown in the large collection at Columbia College, renders the following arrangement the most satisfactory:

*Habenaria ciliaris* (L.), R. Br. in Ait. Hort. Kew. Ed. 2, v. 194 (1813).

*Orchis ciliaris* L. Sp. Pl. 939 (1753). Mx. Fl. ii. 156 (1803).
*Platanthera ciliaris*, Lindl. Orchid., 292 (Aug. 1835).

Var. ALBA (Mx).

*Orchis ciliaris*, var. *alba*, Mx. Fl. ii. 156 (1803).
*O. blephariglottis*, Willd. Sp. Pl. iv. 9 (1805).
*Platanthera blephariglottis*, Torr. Fl. N. Y. ii. 277 (1843).
*Habenaria ciliaris*, v. *blephariglottis*, Chap. Fl. 460 (1860).

Var. HOLOPETALA (Lindl).

*Platanthera holopetala* Lindl. Gen. and Sp. Orch. 291 (Aug., 1835).
*Habenaria blephariglottis*, Hook. Exot. Fl. t. 87 (1825).
*P. blephariglottis*, *v. holopetala*, Torr. Fl. N. Y. ii. 277 (1843).

In this connection it is a matter of interest to note an irregular or monstrous form of *H. ciliaris* which was collected in the vicinity of New York during the last summer by Mr. Henry Ogden. The lip is either entire or imperfectly fringed and obovate, instead of being as in the normal form, long and deeply fringed and long ovate. In some of the flowers the anther cells are 4, in pairs, 2 parallel cells on one side, and 2 on the other; and in some cases there is another cell besides, back of one of the others. In some instances the lateral tubercle or swelling of the clinandrium is mounted upon one of the cells, or partly displaces its lower portion. Most of the flowers are entirely destitute of spurs. Some have spurs as long as the ovary, and a few have spurs not a quarter as long as the ovary.

This species frequently produces only a leaf the first year, flowering the second year. As a result, the collector is often disappointed upon going to a locality and finding no flowers where he found an abundance the year before. I have detected a similar habit in other species.

*Habenaria flava.*—Dr. Asa Gray examined the Herbarium of Gronovius containing the plant upon which Linnæus founded this species, and ascertained beyond a doubt that it is the same as that which has since been called *Habenaria virescens.* (See Am. Jour. Sci. & Arts, xxxvii. 307.) The history of its synonymy is a good illustration of the manner in which some plants under the old methods of nomenclature have travelled about from pillar to post. Dr.

Gray, in the article referred to, gives an outline of the synonymy up to 1840. It appears as *O. virescens*, Willd. Sp. Pl. 4, 37 (1805); as *Habenaria herbiola*, R. Br. in Ait. Hort. Kew. Ed. 2. v. 193, (1813); as *O. flava* and *O. fuscescens* in Pursh (1814), and *O. bidentata* in Elliott (1824). It was subsequently named *Platanthera herbiola* by Lindley in his Gen. et. Sp. Orchid., *H. herbiola* and, as a synonym, *H. virescens*, by Sprengel in his Systema, and then *Platanthera flava* by Dr. Torrey, Bot. N. Y., and by Dr. Gray in the first edition of his Manual. Had Dr. Gray abided by the opinion expressed in his article in the American Journal of Science, in which he says "the specific name is certainly not happily chosen for a plant of which Clayton observes "*floribus obsolete luteis*," *but it must nevertheless be retained*," all would have been well. In spite of this sound dictum, however, in his Manual, Ed. 5, 499, (1867) he rebaptizes the plant as "*Habenaria virescens*, Spreng," adopting Sprengel's synonym. This he does, apparently, because "the flowers are not yellow," though why he should have disregarded Sprengel's name *H. herbiola*, and the still older *H. herbiola* of R. Br. is not clear. In the sixth edition of the Manual the same name, "*virescens*, Spreng," is continued. Besides all this topsy-turvy, the species has had several other aliases. It is easy to see why our plant synonymy is in such a state of confusion when we find authors following their own caprices in substituting new names for old ones. Stability can be secured only by adhering firmly to the principle of priority, no matter what we may think of the appropriateness of the first specific name. The species should therefore be named:

*Habenaria flava*, (L.) Gray, Am. Jour. Sci. and Arts, xxxvii, 308 (1840).

*Orchis flava*, L. Sp. Pl. 942, (1753),

*Cypripedium.*—A single change in the names of our North American species should be noted.

*C. reginæ*, Walt. Fl. Car. 222 (1788).

*C. album*,—Ait. Hort. Kew. iii. 303 (1789).

*C. spectabile*,—Salisb. Trans. Linn. Soc. i. 78. t. 3, f. 3 (1791), and later authors.

## On Legitimate Authorship of Certain Binomials with Other Notes on Nomenclature.

By Geo. B. Sudworth.

Among our North American trees are several species which bear names the authors of which custom, or a desire not to offend the memory of faithful explorers and collectors, has long held to be legitimate. In other words we have on record and in common use, names attributed to authors, who, although knowing them thoroughly, never described the species to which they applied the name. Many such designations appear for the first time as bare catalogue names or in narratives, and have been taken up and ascribed to their originators in some cases with small ground for knowing to what plant the writer applied the name. Closely related to this class of names are those with general notes or remarks on plant features possessed by several species in common, and rendering it exceedingly unsafe to judge of what species the author had in hand. Plant descriptions are highly unsatisfactory and uncertain (without figures) when most carefully drawn, especially with variable and closely related forms; but still less tenable are names founded upon no attempted description and upon such running remarks as "used for a yellow dye;" "a beautiful pine;" "a tall tree."

A few European collectors named our plants in the field, sending their specimens to home herbaria where on examination in a single place one might on seeing the plant with its appended label know what species the collector met, but which in the first published account of his journey is mentioned only by name. Following such lack of published data, painstaking botanists have later figured and described the same species, taking up, with the discoverer as the authority, the originally applied name. But who, in such cases, is the one responsible to the world of botanists at large for the validity of the name? Presumably, and in accordance with the requirements of properly publishing a species, the discoverer is not; for the botanists at large who cannot examine the original specimen, kept in a single herbarium, would never have known what manner of plant was meant, except from the one who described it and published it in some circulating

medium. The discoverer is not, however, defrauded of his just dues in not being cited as the author of a species which he named but did not characterize; the graver responsibility of establishing the species must rest with the describer; for it is to him that the botanist looks for the characters of the plant. Moreover, knowing that no one is legitimately the author of a binomial by merely enumerating a bare name, it is wilfully misleading to quote Jones in our synonymy for a species when we find the characters of the plant not published under his name and by him, but subsequently published by Smith. A similar case is not that of a botanist who names and draws up the characters of his plant, transmitting his manuscript to some publishing monographer, as a part of a larger contribution. It is eminently proper in such cases, as law and custom has held, to credit the original describer.

The following cases are examples of plant names attributed to authors who named the plants they discovered, but described them either insufficiently or not at all.

*Pinus ponderosa*, Douglas, long attributed to David Douglas, who discovered the tree between the Columbia and Spokane rivers, Washington, in 1826, was named by this explorer (Hooker's Companion Bot. Mag. ii. 111, 141, 1836) *Pinus ponderosa*, but he nowhere described it. Douglas' name is therefore a *nomen nudum*. Two years later though (1838) Loudon (Arboretum et Frut. iv. 2243) figured and described the Bull Pine for the first time, erroneously I believe, appending "Douglas" to *Pinus ponderosa*, as Douglas left only a written label accompanying his specimens deposited in the Herbarium of the London Horticultural Society. Strictly, therefore, the name should be written *P. ponderosa*, Loudon. It is of the greatest interest in this connection, however, to note that Douglas' specimen (figured by Loudon, l. c.,) gives the type and locality of this variable species, which is of value in studying the other forms already separated from the type by Engelmann and others.

*Pinus Sabiniana*, Douglas (Comp. Bot. Mag. ii. 150, 1836) printed, however, *Pinus Sabinii* is a *nomen nudum*, and the species was published first by Lambert (Gen. Pinus, iii. 137, t. 58, 1837), who should be cited as the author.

The following synonyms are also *nomina nuda*. *Pinus grandis*,

Douglas (l. c. 147) = *Abies grandis*, Lindley, being published with characters for first time by Hooker (Fl. Bor. Am. ii. 163, 1840); *Pinus amabilis*, Douglas (l. c. 93) = *Abies amabilis*, Forbes, established first by Antoine (Conif. 63, 1840); and *Pinus nobilis*, Douglas (l. c. 147, 1836) = *Abies nobilis*, Lindley, established by Lambert (Pinus iii. 167, 1837). The latter case was correctly understood by Koch (Dendrol. ii. pt. 2, 209), who placed *P. nobilis*, Douglas, at the bottom of his list of synonyms, when, if well founded, it should not have been preceded by Loudon's *Picea nobilis* of later date (1838).

Similar, but difficult cases to touch are such as *Pinus contorta* (Douglas Mss. in Herb. Lond. Hort. Soc.) London iv. 2292; and *P. insignis* (Douglas l. c.) Loudon l. c. 2265. As is clear, so far as Douglas is concerned, these names are *nomina nuda*, and should, if treated critically, be attributed to Loudon, who published them; credit for coining the names being given to Douglas in the historical synonymy of the species.

*Abies concolor*, Lindley & Gordon (in Journ. Hort. Soc. Lond. v. 210, No. 15, 1850), is a name accompanied by no description, but founded on "*Pinus concolor*, Engelm.," which at that time was only an herbarium name, and not published till 1868 (Parlat. in DeCandolle Prodr. xvi. Pt. 2, 426). The *A. concolor* of Lindley & Gordon must therefore be considered a *nomen nudum*, which it is in fact. The first properly published name applied to this fir is the *Picea concolor* of Gordon (Pinetum 155, 1858), and the combination *Abies concolor* must be attributed to Parry (Am. Nat. ix. 204, 1875), who described the species sufficiently to establish the name. His running characterization of *Abies concolor* is somewhat meagre, but if carefully weighed can apply only to the White Fir, in which case Parry becomes the author of *Abies concolor* (Gord.) = *Picea concolor* (Gordon, l. c. 1858).

The following names, at present treated as synonyms, seem to warrant restoration as the oldest for the species:

*Fagus ferruginea*, Aiton (Hortus Kew. iii. 362, 1789). There is no doubt but that Marshall sets forth the essential characters of the Beech under "Fagus, the Beech Tree" (Arbustum Am. 45), designating our species as *Fagus sylvatica atro-punicea*, "American Beech Tree" (l. c. 46, 1785), in the light of which Aiton's

later name should be replaced by Marshall's, which was published four years earlier. The name for the American Beech would then become *Fagus atropunicea* (Marsh.)=*F. sylvatica atro-punicea*, Marsh. (l. c. 1785)=*F. ferruginea*, Aiton (l. c. 1789).

*Carpinus Caroliniana*, Walter (Flora Car. 238, 1788). The first name applied to this species is that of Marshall, *Carpinus Betulus Virginiana* (Arbustum Am. 25, 1785), antedating Walter's name by three years. There can be no reasonable doubt as to what plant Marshall applied his name, either as shown in his diagnosis of the genus *Carpinus* or in his description of the "American Hornbeam." Walter's long-established—but misapplied—specific name *Caroliniana* should, therefore, give place to Marshall's earlier —but equally misapplied—*Virginiana*, the name for the Blue Beech then becoming *Carpinus Virginiana* (Marsh.)=*C. Betulus Virginiana*, Marshall (l. c. 1785)=*C. Caroliniana*, Walter (l. c. 1788) =*C. Americana*, Lam. (Encycl. iv. 708, 1797).

*Salix lasiandra*, var. *Fendleriana*, Bebb. (Bot. Calif. ii. 84, 1880), Nuttall appears to have been the first to describe this Western willow, under the name *Salix pentandra*, var. *caudata* (Sylva i. 61, t. 18, 1842), a name which is commonly cited as a synonym of var. *Fendleriana*. Prof. Bebb's reason, if any exists, for not maintaining the older varietal name for this plant is unknown to us at present; but as it is well known to be the original name, it seems desirable to now reinstate Nuttall's var. *caudata*, which would give *S. lasiandra*, var. *caudata* (Nutt)= *S. pentendra*, var. *caudata*, Nuttall (l. c., 1842)= *S. lasiandra* var. *Fendleriana*, Bebb (l. c., 1880).

*Populus monilifera*, Aiton (Hort. Kew. iii. 406, 1789). Marshall describes a tree under the name *Populus deltoide* (Arbustum Am., 106, 1785), which cannot be ignored as inapplicable to one of our Eastern Poplars. Koch (Dendrologie ii. Pt. 1, 487), doubtfully referred Marshall's species (corrected to "deltoides") to *Populus grandidentata*, Michx., and later Prof. Sargent makes it a synonym of *P. monilifera*, a decision which, we believe, is correct. For a careful examination of the various forms and stages of leaf development of this cottonwood does not require imagination to reconcile Marshall's description of this tree. The geographical range indicated by him is, moreover, in accordance with what is

known to be true, and certainly applies only in part to the Large-toothed Aspen. In this event Marshall's *Populus deltoide(s)* (1785) should replace Aiton's *P. monilifera* (1789).

*Populus balsamifera*, var. *candicans*, A. Gray (Man. Ed. 2, 419, 1856). It has been generally conceded that the *Populus Canadensis* of Moench (Verz. Baume, No. 81), published in 1785, was applied to the variety of our Balm-of-Gilead, and is, therefore, an older name than Gray's *candicans* by seventy-one years. The *P. balsamifera lanceolata*, Marsh (1785), of the same date, and also referred to this variety as a synonym, doubtless had better be referred to the type, the characters of which seems to fit Marshall's description with fewer allowances than are necessary in applying his name to the variety. The name for this variety should then become *P. balsamifera*, var. *Canadensis* (Moench)= *P. Canadensis*, Moench (l. c., 1785) = *P. balsamifera*, var. *candicans*, A. Gray (l. c., 1856).

*Thuya gigantea*, Nuttall (Journ. Phil. Acad. vii. 52, 1834). The oldest name applied to this species is the *T. plicata* of Donn. (Hort. Cantab. Ed. 6, 249, 1811); but this name was published without description, and must be considered a *nomen nudum*. Lambert, however, established the name eleven years later, 1824 (Gen. Pinus, Rd. 1, ii. 19), and ten years before Nuttall applied *T. gigantea*. *T. plicata*, of Lambert, (1824) should, therefore, replace *T. gigantea*, of Nuttall, (1834).

*Pinus Banksiana* Lambert (Gen. Pinus Ed. 1, 7, t. 3, 1803). In the first edition of Aiton's Hortus Kewensis (iii. 366, 1789) occurs this trinomial, "*Pinus sylvestris, divaricata*," founded on one of the principal characters of the Jack Pine, *foliis divaricatis obliquis, Habitat ad Sinum Hudsonis*. There is but one other pine in North-eastern North America, besides the Jack Pine, having two leaves in a sheath which could have been confused, i. e., the Red Pine (*Pinus resinosa*); a species which Aiton carefully and fully describes on the next page of the same work. As acknowledged, moreover, by De Candolle and others, who cited the name as a synonym of Lambert's *P. Banksiana*, there can be no question but that the Northern Jack Pine was the tree named. The name for this pine should then be *Pinus divaricata* (Aiton)= *P. sylvestris, divaricata* (Aiton, l. c., 1789)=*Pinus Banksianna*, Lambert (l. c., 1803).

*P. Cubensis*, Grisebach (Mem. Am. Acad. viii, Pt. 2, 530, 1863). The first account of this Southern and West Indian pine is by Stephen Elliott, who considered it a variety of the common Loblolly Pine, calling it *Pinus Tæda*, var. *heterophylla*, (Sketch Bot. S. C. and Ga. ii. 636, 1824). It was imperfectly known to Elliott, who observed it only in Georgia, its later-discovered geographical range not being known then, although he well recognized its distinctness among the other mainland pines. His description lacks any mention of the cones, showing that he had not observed their very distinct appearance, yet his characterization of male flowers, leaves, bark, wood, and habitat, points unquestionably to the so-called Cuban Pine. Fortunately, the varietal name *heterophylla* is most fitting in its application to this pine, a marked feature of the species being that its leaves occur two and three in a sheath on the same branch. Since, therefore, the insular *Pinus Cubensis* and mainland forms are now known to be the same; there appears to be no good reason for not reinstating Elliott's original varietal name in specific rank. Dr. Engelmann did not hesitate to cite Elliott's name as an equivalent of his own, later, *P. Elliottii* (Trans. St. Louis Acad. iv. 186, t. 1, 2, 3, 1879), which in now to be considered a synonym of Grisebach's older *P. Cubensis*. The name for the Cuban Pine would then become *P. heterophylla* (Ell.) = *P. Tæda* var. *heterophylla*, Elliott (l. c., 1824) = *P. Cubensis*, Grisebach (l. c., 1863) = *P. Cubensis*, var. *terthocarpa*, Wright (in Griseb. Cat. Pl. Cub. 217 (1866) = *P. Elliottii*, Engelmann (l. c., 1879).

*Abies magnifica*, Murray, (Proc. Royal Hort. Soc. Lond. iii. 318, f. 25, 33, 1863.) Murray seems to have published in 1860 another name for this species, *A. campylocarpa*, three years earlier than the now generally accepted *A. magnifica*. It is desirable if possible to reinstate the older *A. campylocarpa*, but the foundation upon which it rests appears to be insecure. The leaves described under *A. campylocarpa* might belong equally well to the closely related *A. nobilis*; but the length of the cone noted excludes all other associated species. The inference then to be drawn from the fact that no mention is made under *A. campylocarpa* of conspicuously exserted bracts (common to *A. nobilis*) points circumstantially to *A. magnifica* as the only fir to which Murray could have applied his name. The uncertainty, however, seems too great to warrant a

change of a well-known and established name, especially with respect to species not too well defined. Provisionally, therefore, *A. campylocarpa* may be retained as a synonym of the later, but better founded *A. magnifica*.

*Canella alba*, Murray, (in Linn. Systema Veg. ed. 14, iv. 443, 1784.)

Linnæus' *Laurus Winterana* (Spec. Pl. ed. 1, 371, 1753, exclusive "Hab. in Carolina") is the oldest name applied to this semi-tropical Florida and West Indian tree. Gaertner (Fruct. i. 377, t. 77, 1788) took up Linnaeus' specific name *Winterana* under *Canella*, but was not followed by subsequent authors. It is evident, however, that Gaertner's *Canella Winterana* should be maintained. Linnaeus' *Winterania Canella* (Spec. Pl. ed. 2, 636, 1763) is also an older name than Murray's *C. alba*, which if taken up would give (*Canella Canella*) a combination, though that fortunately can now be avoided.

FORESTRY DIVISION,
U. S. DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C.

## On the American Black Cottonwood.*

BY P. A. RYDBERG.

(PLATES CXL. AND CXLI.)

"372. *Populus sp* . . . . . When approaching the Carter Canon, in Scott's Bluff County, I saw, at a distance, some dark green trees with pyramidal crowns. Not knowing any other tree with dark foliage and pointed top growing in the region, I took them for unusually tall specimens of *Juniperus Virginiana*. Coming a little nearer, I saw my mistake. It was a *Populus*, unlike all I have seen. As the buds were very balsamiferous and the leaves cuneate at the base, I thought it was nothing but *P. angustifolia*, which I have never seen growing. When at home, I compared it with my specimens of this poplar, collected by Mr. T. A. Williams in the Hat Creek Basin in North-western Nebraska, and I saw at once the difference between the two. Although the leaves of my

*Read before the Botanical Seminar of the University of Nebraska.

poplar are rhomboid-ovate, cuneate at the base, and not whitened beneath, I do believe that, if not distinct from both, it is a variety of *P. balsamifera* rather than of *P. angustifolia.* The leaves are rhomboid, on petioles 1-2 inches long (in *P. angustifolia* they are only ½-1 inch.), generally long-acuminate, shining on both sides, regularly crenate except at the cuneate base. The teeth are larger, more distant, and more regular than in *P. angustifolia.* Dr. Bessey states that the general appearance of the true *P. angustifolia* is more that of a willow than of a poplar, which is not at all the case with this. The general growth, the size, form, and color of the trunk were somewhat between those of *P. balsamifera* and *P. angulata*, although most like the former. The long and slender petioles remind one of the latter or even of the Quaking Aspen. Dr. S. Watson says in his Revision about *P. angustifolia:* "Two forms are spoken of, the Yellow Cottonwood, making fair lumber, and the Black Cottonwood, common and extensively planted in Utah, but the wood is considered worthless." May be, this is the former. I saw it growing only at one place, viz., in Carter Canon, where it grew along the brook, together with *P. angulata.* The grove contained over 100 trees of this poplar, 40 to 60 feet high, some measuring 18 inches in diameter. Carter Canon, S. B. Co., July 26."

The above is an abstract from my list of plants, collected in Western Nebraska, in the summer 1891, for the U. S. Department of Agriculture. John M. Holzinger, Assistant Botanist of the same department, who afterwards examined my collection, wrote me, among other things concerning this tree: "I make it, after careful consideration, *Populus angustifolia*, James. The difficulty seems to arise from the mature leaves: herb. material generally has them undeveloped." I still believe, however, the above to be distinct from *P. angustifolia*, James, or, at least, from what we have been used to call so. I saw both, this summer:—my No. 372 both with undeveloped and mature leaves, and the true *P. angustifolia*, on the 28th of June, at which time the leaves, although not mature, yet had received their form. Specimens with mature leaves are found in the herbarium of the University of Nebraska.

Judging from the material on hand, I do not hesitate to declare them to be distinct species. Perhaps, if I had a fuller series of specimens, I would be of another opinion. Taking for granted

that they are two distinct species, or, at least, two varieties, let us see which has the right to the name of *Populus angustifolia*, James.

The original description by James I have not seen, but I must suppose that both Dr. Watson and Nuttall knew James' tree, and have described the same. Dr. Watson writes in his Revision of the North American Cottonwoods:

"*P. angustifolia*, James. Leaves not white beneath, rhombic-ovate to narrowly lanceolate, mostly cuneate at the base, often small, petioles one-half inch long or less (rarely one inch), etc."

In King's Report, the description of *Populus balsamifera*, var. *angustifolia*, contains among other characters:

". . . leaves ovate-lanceolate, attenuate at the base, acute, glabrous, crenate-serrate. Leaves varying much between the ordinary growth (2′–3′ long by 8″–12″ wide, acute and often subrhomboidal) and that of younger shoots where they may be 6′–8′ long and 3′ or more broad, and often cordate at base, always with long acumination."

Nuttall, in Silva Americana, gives about the same description, and adds:

"The footstalks of the leaves or petioles are about three-fourths to an inch in length. The nerves are all faint beneath and pinnate, with no appearance of being 3-nerved at the base; the number of these nerves or lateral vessels is twelve to fifteen on a side, at least double the number they are in the Balsam Poplar."

These descriptions can only apply to the form we are used to call *P. angustifolia*, James. All specimens thereof found at present in the Herbarium of the University of Nebraska, agree in that the petioles are short, from ½ to 1 inch long, and the lateral nerves are, at least in the larger leaves, about 10–15 on each side. (See Plate CXL.). In the specimens of my No. 372, from Carter Canon, and of the same tree collected, this year, at Hot Springs, S. D., the petioles are from 1–2 inches or even more, and the lateral nerves seldom more than 8.

As it is remarked by Dr. Watson, the leaves of the Black Cottonwood vary considerably, especially on young shoots. All specimens I have used for comparison are taken, however, from trees over 20 feet high. The first leaves from the bud are generally more or less ovate, 1–2½ inches long. These are followed by

lanceolate leaves, 2–5 inches. All the leaves are gradually acuminate towards the apex, and finely crenate-serrate from base to tip. In the specimens collected by Dr. Bessey, at Manitou, Col., July 18, 1886, the first leaves are very broad, with rounded or even cordate base. In my own specimens from Little Elk Canon, S. D., June 28, 1892, the leaves are small and nearly all lanceolate.

The leaves of my No. 372 differ, besides in the length of the petiole, in being rhomboidal, always having cuneate base and an abrupt acumination. The teeth are scarcely any from the base to near the broadest part of the leaf, from there they are more regular and larger than in *P. angustifolia*, till they disappear again at the acumination. The specimens from Carter Canon have the leaves twice as long as broad, and with long acumination. In those from Hot Springs the leaves are broader (the breadth equalling ⅔ or ¾ of the length) with a shorter acumination. The latter are in form like the leaves of *P. Hudsonica*, Michx. f., figured in Silva Americana, but the shoots and petioles are not hairy. They also resemble those of the Black Cottonwood of Europe, *P. nigra* (*P. Hudsonica*, according to Gray), which, however, if I am not mistaken, has angled petioles. It seems to approach the true cottonwoods in several respects.* I have mentioned above the form of the leaves and the length of the petioles. The old bark resembles somewhat that of *P. monilifera*, but is whiter. The crown, although pyramidal in form, is more extensive than in *P. angustifolia*, the branches being more spreading and the leaves semi-pendent. The trees of *P. angustifolia* that I have seen were all narrowly pyramidal with ascending branches, giving them the aspect of a willow, a fact, as is stated before, which then has been noticed by Dr. Bessey.

What, is this cottonwood? Four alternatives present themselves to me: a species distinct from *P. angustifolia*, a local variety, a mere form of the same, or a hybrid. As I have stated before, I am most inclined to believe the first. A local variety, produced by the climate, it cannot very well be, as the two are growing in

*In D.C. Prod., the American Black Cottonwood is referred to the common Cottonwood, under the name *Populus Canadensis*, var. *angustifolia*, Wesmael. To place our *P. angustifolia* as a variety of *P. Canadensis* (*P. monilifera*) was, indeed, a blunder. If Wesmael had seen my No. 372, instead of the true *P. angustifolia*, the mistake would be, perhaps, more excusable.

the same habitat, viz.: in canons, near water, at the same altitude, and in the same region. A mere form, or individual variation of the Black Cottonwood, it cannot be. Of the more than 100 trees growing in Carter Canon, I did not see a single one that had lanceolate leaves with short petioles, nor a narrow crown; and at Little Elk, where I saw about as many trees of the true *P. angustifolia*, I did not notice a single one that had the long petioles and abrupt acumination characteristic of my No. 372. At Hot Springs, I saw only three Black Cottonwoods, and all three agreed with those from Carter Canon, except that the leaves were broader. Dr. Chas. E. Bessey and Prof. T. A. Williams, of South Dakota Agricultural College, who have both seen the Black Cottonwood several times have not seen a form like this. The fact that my No. 372, in both places was growing together with *P. monilifera*, might suggest the possibility of its being a hybrid of that and *P. angustifolia;* but the total absence of the latter tends to show the contrary.

Believing that there are two American Black Cottonwoods, I shall try to give the distinguishing characters:

*Populus angustifolia*, James.—Leaves lanceolate or ovate, gradually acuminate, with cuneate, rounded, or heart-shaped base, on short petioles (½ inch long), thickish, drying yellowish or brownish, finely crenate-serrate from base to apex; lateral nerves in the larger leaves often 10-15; crown narrowly pyramidal with ascending branches. Collected by Dr. Chas. E. Bessey, at Manitou, Col., July 18, 1886, etc.; by T. A. Williams, in War Bonnet Canon, June, 1890, etc.; by myself, in Little Elk Canon. (Plate CXL.)

*Populus acuminata*, n. sp. (No. 372 of my Nebraska Collection). Leaves more or less rhomboidal, abruptly acuminate, with cuneate base and long petioles (1′–2′ long, or more), semi-pendent, thinner than in the preceding, drying green; denticulation scarcely any at the base and near the top; at the middle, regular and larger than in the preceding; lateral nerves seldom more than 8 on each side; crown broadly pyramidal with spreading branches. Collected by me in Carter Canon, Scott's Bluff Co., Neb., July 25, 1891, and at Hot Springs, S. D. (Plate CXLI.)

LUTHER ACADEMY, WAHOO, NEB., Oct. 15, 1892.

[Mr. Rydberg's description of *P. angustifolia* and his figure (Plate CNL.) agree accurately with James' type specimen, preserved in Herb. Torrey. N. L. B.]

## A Century of American Weed Seeds.

By Byron D. Halsted.

A collection of one hundred kinds of weed seeds, brought together in the shape shown in the accompanying engraving, is a new thing in American Economic Botany.

The seeds are placed in dram metal screw-cap vials, arranged in a shallow tray about the length and breadth of a standard

herbarium sheet, as illustrated in the cut. Each bottle bears a number and the botanical and one or more common names of the species of the seed contained therein, as for example:

"No. 34. *Anthemis Cotula*, L. Mayweed, Dog-fennel."

Upon the underside of the cover to the tray is pasted a full list of the species with numbers to correspond with those upon the vials. After the common names the letter A indicates that the species is annual; B, biennial; and P, perennial. Thirty-eight (38) are native species and sixty-two (62) are from abroad, thus showing a large majority of foreign origin. The annuals lead with forty-eight (48) species; perennials next with thirty-five (35); biennials, fifteen (15); and two (2) live either one or two years.

The following is the list of species :

RANUNCULACEÆ—Crowfoot Family.

1. *Ranunculus bulbosus*, L. Buttercup. P.†

CRUCIFERÆ—Mustard Family.

2. *Barbarea vulgaris*, R. Br. Yellow Rocket. B.
3. *Brassica nigra*, (L.) Koch. Black Mustard. A.
4. *Brassica Sinapistrum*, Boiss. Charlock. A.
5. *Bursa pastoris*, (L.) Weber. Shepherd's Purse. A.
6. *Lepidium campestre*, (L.) R. Br. Field Pepper-grass. A.
7. *Lepidium Virginicum*, L. Pepper-grass. A.
8. *Raphanus Raphanistrum*, L. Wild Radish. A.
9. *Sisymbrium officinale* (L.) Scop. Hedge Mustard. A.

CARYOPHYLLACEÆ—Pink Family.

10. *Agrostemma Githago*, L. Corn Cockle. A.
11. *Saponaria officinalis*, L. Bouncing Bet. P.

PORTULACACEÆ—Purslane Family.

12. *Portulaca oleracea*, L. Purslane. A.

MALVACEÆ—Mallow Family.

13. *Abutilon Avicennæ*, Gærtn. Velvet-leaf. A.
14. *Hibiscus Trionum*, L. Bladder Ketmia. A.
15. *Malva rotundifolia*, L. Mallow. P.

GERANIACEÆ—Geranium Family.

16. *Erodium cicutarium*, L'Her. Storksbill. A.

LEGUMINOSÆ—Pea Family.

17. *Cassia Chamæcrista*, L. Partridge Pea. A.
18. *Crotalaria sagittalis*, L. Rattle-box. A.
19. *Medicago lupulina*, L. Nonesuch. B.
20. *Melilotus alba*, Lam. White Melilot. A–B.
21. *Melilotus officinalis* (L.) Lam. Sweet Clover. A–B.

ROSACEÆ—Rose Family.

22. *Agrimonia Eupatoria*, L. Agrimony. P.

ONAGRACEÆ—Evening Primrose Family.

23. *Œnothera biennis*, L. Evening Primrose. B.

PASSIFLORACEÆ—Passion-flower Family.

24. *Passiflora incarnata*, L. May-pops. P.

FICOIDEÆ—Carpet-weed Family.

25. *Mollugo verticillata*, L. Carpet-weed. A.

UMBELLIFERÆ—Parsnip Family.

26. *Daucus Carota*, L. Wild Carrot. B.
27. *Pastinaca sativa*, L. Wild Parsnip. B.

RUBIACEÆ—Madder Family.

28. *Diodia teres, Walt.* Buttonweed. A.

DIPSACEÆ—Teasel Family.

29. *Dipsacus sylvestris*, Huds. Teasel. B.

COMPOSITÆ—Sunflower Family.

30. *Achillea Millefolium*, L. Yarrow. P.
31. *Ambrosia artemisiæfolia*, L. Ragweed. A.
32. *Ambrosia trifida*, L. Great Ragweed. A.
33. *Anthemis arvensis*, L. Chamomile. A.
34. *Anthemis Cotula*, L. Mayweed. A.
35. *Arctium Lappa*, L. Burdock. P.
36. *Bidens bipinnata*, L. Spanish needles. A.
37. *Bidens frondosa*, L. Beggars-ticks. A.
38. *Chrysanthemun Leucanthemum*, L. Daisy. P.
39. *Cichorium Intybus*, L. Chicory. P.
40. *Carduus arvensis*, L. Canada Thistle. P.
41. *Erechthites hieracifolia* (L.) Raf. Fireweed. A.
42. *Erigeron annuus* (L.) Pers. Fleabane. A.
43. *Erigeron Canadensis*, L. Horse-weed. B.
44. *Erigeron ramosus* (Walt.) B. S. P. Rough Fleabane. B.
45. *Hieracium aurantiacum*, L. Golden Hawkweed. P.
46. *Lactuca Canadensis*, L. Wild Lettuce. B.
47. *Lactuca Scariola*, L. Prickly Lettuce. B.
48. *Rudbeckia hirta*, L. Cone-flower. P.
49. *Solidago lanceolata*, L. Narrow Golden-rod. P.
50. *Solidago rigida*, L. Stiff Golden-rod. P.
51. *Sonchus oleraceus*, L. Sow Thistle. A.
52. *Taraxacum officinale*, Web. Dandelion. P.
53. *Vernonia Noveboracensis* (L.) Willd. Iron-weed. P.
54. *Xanthium Canadense*, Mill. Cocklebur. A.
55. *Xanthium spinosum*, L. Spiny Clotbur. A.

APOCYNACEÆ—Dogbane Family.

56. *Apocynum cannabinum*, L. Dogbane. P.

ASCLEPIADACEÆ—Milkweed Family.

57. *Asclepias Syriaca*, L. Milkweed. P.

BORRAGINACEÆ—Borage Family.

58. *Cynoglossum officinale*, L. Hound's-tongue. B.
59. *Echinospermum Lappula* (L.) Lehm. Stick-seed. B.
60. *Echium vulgare*, L. Blue-weed. B.

CONVOLVULACEÆ—Morning-glory Family.

61. *Convolvulus arvensis*, L. Bindweed. P.
62. *Ipomœa hederacea*, Jacq. Morning-glory. A.

SOLANACEÆ—Night-shade Family.

63. *Datura Stramonium*, L. Thornapple. A.
64. *Datura Tatula*, L. Purple Thornapple. A.
65. *Physalis Virginiana*, Mill. Ground-cherry. P.
66. *Solanum Dulcamara*, L. Bitter-sweet. P.

SCROPHULARIACEÆ—Figwort Family.

67. *Linaria vulgaris*, Mill. Toad-flax. P.
68. *Verbascum Blattaria*, L. Moth Mullein. B.
69. *Verbascum Thapsus*, L. Mullein. B.

OROBANCHACEÆ—Broom-rape Family.

70. *Orobanche ramosa*, L. Broom-rape. A.

BIGNONIACEÆ—Bignonia Family.

71. *Tecoma radicans* (L.) Juss. Trumpet-flower. P.
72. *Verbena hastata*, L. Blue Vervain. P.
73. *Verbena urticæfolia*, L. Vervain. P.

LABIATÆ—Mint Family.

74. *Brunella vulgaris*, L. Heal-all. P.
75. *Leonurus Cardiaca*, L. Motherwort. P.
76. *Nepeta Cataria*, L. Catnip. P.

PLANTAGINACEÆ—Plantain Family.

77. *Plantago lanceolata*, L. Rib-grass. P.
78. *Plantago major*, L. Common Plantain. P.
79. *Plantago Rugelii*, Dec. Native Plantain. P.

AMARANTACEÆ—Pigweed Family.

80. *Amarantus albus*, L. Tumble-weed. A.
81. *Amarantus chlorostachys*, Willd. Amaranth. A.
82. *Amarantus paniculatus*, L. Branched Pigweed. A.
83. *Amarantus retroflexus*, L. Pigweed. A.

CHENOPODIACEÆ—Goosefoot Family.

84. *Chenopodium album*, L., Goosefoot. A.

PHYTOLACCACEÆ—Pokeweed Family.

85. *Phytolacca decandra*, L. Pokeroot. Scoke. A.

POLYGONACEÆ—Smartweed Family.

86. *Polygonum Convolvulus*, L. Black Bindweed. A.
87. *Polygonum Pennsylvanicum*, L. Smartweed. A.
88. *Rumex Acetosella*, L. Sorrel. P.
89. *Rumex crispus*, L. Curled Dock. P.
90. *Rumex obtusifolius*, L. Bitter Dock. P.

EUPHORBIACEÆ—Spurge Family.

91. *Euphorbia maculata*, L. Spotted Spurge. A.
92. *Euphorbia Preslii*, Guss. Spurge. A.

GRAMINEÆ—Grass Family.

93. *Agropyrum repens* (L.) Beauv. Quack-grass. P.
94. *Bromus secalinus* L. Chess. A.
95. *Cenchrus tribuloides*, L. Bur-grass. A.
96. *Panicum capillare*, L. Witch grass. A.
97. *Panicum Crus-galli*, L. Barnyard-grass. A.
98. *Panicum sanguinale*, L. Crab-grass. A.
99. *Chamæraphis glauca* (L.) Kuntze. Fox-tail. A.
100. *Chamæraphis viridis* (L.) Kuntze. Green Fox-tail. A.

The hundred species are distributed among thirty-one families. Twenty-six (26), or more than a quarter, belong to the large weedy order Compositæ. Other well-represented orders are the mustards and the grasses, each having eight species.

It is a well-known fact that weeds are often introduced into new localities in field, and even garden seeds; sometimes as many as forty kinds of weed seeds have been identified in a sample of clover seed, and grass seed is frequently no less free from foul stuff. Therefore sets of these seeds, as shown in the engraving, have been prepared to aid *stationists* (pardon the coining of a new word for station-agriculturists, station-horticulturists, station-botanists and other station workers taken collectively) and seedsmen in determining the exact nature of much of the impurity found in commercial seeds.

College Experiment Station, New Brunswick, N. J., Dec. 29, 1892.

## Preliminary Report on the Flora of Luzerne County, Penn.

By A. A. Heller.

We are more or less prone to consider the long-settled portions of our country old and undesirable ground, when botanical exploration is thought of. Mexico, the far West, or some other distant point, claims our attention, and we forget that all around us is an abundance of territory that has never been touched by a botanical collector.

I have just begun to realize that the State of Pennsylvania is a great botanical wilderness. Many of the counties have never been explored, or only partially. Most of the work that has been done is due to the untiring energy of Prof. Thos. C. Porter. Our own county of Lancaster, which can boast of almost fifteen hundred species, an account of which has been published by Dr. Porter, has a great tract of limestone and new red sandstone, comprising more than half of the county, that is sadly in need of attention.

To me, one of the most interesting of these "wild" counties is Luzerne, situated somewhat northeast of the centre of the State. To the Torrey Club it is especially interesting, as it falls within the limits of the Preliminary Catalogue, the one hundred mile circle cutting through the eastern part of the county.

During the summer of 1888 my attention was first called to its interesting flora, while staying at Berwick, Columbia county. The northern part of Berwick touches the southern boundary of Luzerne county. The county is cut almost in half by the Susquehanna river, and contains seven marked geological formations. Within three of these, Chemung, Hamilton and Catskill formation, and in territory chiefly within the limit of glacial action, it has been my privilege to collect, though to a very limited extent. The terminal moraine, as I have since ascertained, makes its appearance at Wapwallopen, about seven miles above Nescopeck, runs in a southwesterly direction across the river, which it follows nearly to Berwick, and thence passes into Columbia county.

On the high bluff on the right bank of the river, and almost on the southern boundary line, is a quantity of *Tissa rubra*, and along the steeply-sloping sides, numerous patches of *Sedum acre*. Following north, along the tracks of the Delaware, Lackawanna & Western Railroad, which runs parallel to the river and canal, many of our common plants are to be found. Here *Solidago juncea* blooms earlier than at any other place where I have seen it, making its appearance in July.

*Asclepias obtusifolia* is not common, only two or three plants being observed, while a rare find in the shape of three plants of *Spiræa rubra*, the only ones that I have ever seen growing wild, peeped out from the rank growth of grass and bushes. *Apios tuberosa* twined over the bushes, near neighbor to *Phlox maculata* and *Lathyrus palustris*. Down along the low margin of the canal a tangled mass of *Myosotis laxa* was guarded by the large and showy blue flag, *Iris versicolor*. In a little swampy place along the river, *Veronica scutellata* flourished, and in drier and more open places, *Ranunculus acris* and *Œnothera pumila*. Growing in the sand on the river brink, was a little patch of *Ranunculus reptans*, which is completely submerged except at times of low water.

In March, 1892, I spent two days at Berwick, and, while taking a walk along the railroad, observed a number of small pine trees growing on the side of the bank. They were full of cones, and close inspection satisfied me that they are *Pinus echinata*, although I do not have specimens to substantiate the determination. If it is really this pine, its appearance so far North is remarkable, at least at such a distance from the coast.

Crossing the river to Nescopeck, and following up the left bank for about the same distance as on the right bank, namely, about a mile and a half, quite a different flora is observed. One of the first things noticed was a stalk or two of *Cacalia suaveolens*, and further on an occasional plant of *Physostegia Virginiana* and *Hypericum ellipticum*. Overhanging the river bank in deep, shady places, were clumps of *Rhododendron maximum*, the recollection of which leaves a bright spot in one's memory, for few things are prettier than the sea of glossy green leaves, intermingled with the glorious flower clusters of *Rhododendron*. I do not attach a specific name, as it is not an easy matter to decide which *Rhododendron* is the most handsome, for when I first saw the gorgeous purple masses of *R. Catawbiense* at Blowing Rock and on Grandfather Mountain, North Carolina, they seemed more beautiful than any other, until the delicate white and pink of *R. maximum* appeared almost at our very doors. Two rare finds were *Stellaria uliginosa* and *Pyrola chlorantha*, each represented very sparingly.

Following Black Creek for a short distance beyond Nescopeck, only a few things of interest were found, among which were *Monarda fistulosa*, var. *rubra*, *Veronica Virginica* and two forms of *Spiræa salicifolia*, one with broad leaves, and the other with narrow ones. One day I heard of a little body of water, which was said to be a famous place for water lilies, and rightly concluded that other plants might be found there. Locally it is known as the "Pond," and "Lily Lake," and officially on the map as Long Pond. It is situated some ten or twelve miles northeast of Berwick, and about three miles from the river. It was visited first on July 5, 1888, then on June 24th and July 29, 1889, by myself, and on August 15th and 16th, 1889, by Mr. Small and myself, and by us again on September 20, 1890. Then came an interval of two years, until September 16th and 17th, 1892, when Miss E. Gertrude Halbach and myself made the so far final trip, and of it I intend especially to speak.

On the morning of September 16th we crossed from Berwick to Nescopeck, taking the train to Pond Hill, a station nine miles farther north. Just opposite the station, and only a few feet from it, at the base of the hill which skirts the river, is an outcropping of rocks full of imprints of crinoids and other fossils. Upon the

rocks were found *Woodsia Ilvensis* and a few plants each of *Camptosorus rhizophyllus*, *Asplenium Trichomanes*, and *Arabis lyrata*. Here Nature had been lavish with her paint-brush. Under the trees of *Cornus florida*, whose bright-colored leaves lit up the wooded hillside, was an abundance of *Solidago bicolar*, *S. cæsia*, and *Eupatorium ageratoides*. The fence rows were purple with *Aster Novæ-Angliæ*. About three hundred yards from the station the road turns to the right, through the woods, and up to the top of the hill. Along this road the polymorphous *Solidago nemoralis* was very plentiful, as was *S. lanceolata* and *S. latifolia*. *S. squarrosa* was found only occasionally.

It is to be regretted that we did not take an old road below the present one, for along it in 1889 I found several specimens of *Solidago rupestris*, a very rare find for Northeastern Pennsylvania. This old road was reserved for the return trip, but at that period time, which is no respecter of botanists, was urging us on at a lively gait in order to catch the train. There was just one cause for regret, and that was when we came to the station for the rare *Aster concinnus*, discovered by Mr. Small and myself in 1890. The farmer along whose fence they grew had an idea that "weeds" do not improve the appearance of fence-rows, and had cut them down. Owing to this only two poor specimens were obtained.

The lake, a beautiful little sheet of water about two miles long and a mile wide, is evidently a relic of the glacial period. According to the aneroid barometer, it is 880 feet above sea level, and 480 feet above the river. On the north it is skirted by a low mountain ridge, on the west by gently-sloping ground, with indications that there was once an outlet on that side, and on the other sides by low and often swampy ground. It is a veritable botanical Paradise. The chocolate-colored water is full of little peat islands, literally swarming with vegetation, while the shores are lined with shrubs, and the woods full of interesting plants. A boat was procured, and a voyage of discovery begun. Among the first things observed were the tiny yellow flowers of *Utricularia gibba* rising from a very ugly-looking mixture of peat and mud. Masses of roots of *Castalia odorata* were floating about, nuclei for the growth of future vegetation. A very tempting-looking bush of *Ilex verticillata*, var. *padifolia* caused us to land and investigate the shore.

A good supply of several forms of *Ilex* was gathered, in addition to *Spiræa salicifolia*, *S. tomentosa*, *Cassandra calyculata*, *Polygonum emersum*, and *Vaccinium corymbosum*, var. *amœnum*. *Vaccinium disomorphum*, so plentiful two years before, the taste of whose fruit seems still to linger, was not observed. At that time the fruit was so plentiful that its weight bent the bushes almost to the water's edge.

Pushing off again, we were soon among colonies of *Xyris Caroliniana*, *Eriocaulon septangulare*, *Oxycoccus macrocarpus*, *Eleocharis olivacea*, found nowhere else in Pennsylvania, and *Juncus pelocarpus* found at one other station in the State. Winding in and out among the bushes of *Cephalanthus occidentalis* and clumps of *Nesæa verticillata*, which form a sort of breakwater, we hove in sight of "Stumptown," as it was promptly christened, near the upper end of the lake. It seems at one time to have been dry, or as near dry land as is possible there, for stumps are very plentiful, and so are lilies, their pretty white and golden cups resting lightly upon the surface of the water. *Sarracenia purpurea* was searched for, but in vain, although it is found there earlier in the season. An almost submerged log near the shore is headquarters for *Drosera rotundifolia* and *D. intermedia*, var. *Americana*, the two sometimes growing matted together. Another landing was made, and fine specimens of *Aster corymbosus*, *A. linariifolius*, *A. undulatus* and other plants were collected. A hasty investigation of the opposite or north shore yielded *Polygonum hydropiperoides* and *Potamogeton Nuttallii*. The lengthening shadows warned us that it was time to suspend operations, and further investigation was abandoned until next day.

Early the following morning we were out on the lake, getting a good supply of things that had merely been sampled the day before, and looking out for new treasures. *Cicuta bulbifera*, *Bœhmeria cylindrica*, a form of *Bidens cernua* which I have seen nowhere else, and *Coreopsis discoidea*, held sway over a patch of peat. *Aster undulatus*, with larger flowers than usual, and thin, broad leaves, several forms of *A. cordifolius*, *A. lateriflorus*, var. *hirsuticaulis*, a small flowered form of *Solidago arguta*, and a form of the exceedingly variable *Ilex verticillata* were collected. In the hasty search over a field, only one plant of *Gnaphalium decurrens* was found, but on the edge of the woods were good fruiting specimens

of *Quercus Muhlenbergii*, var. *humilis*, and *Betula lenta*. A good-sized tree of *Pyrus nigra* was looked for, but absence of fruit and the lateness of the hour prevented us from making a thorough search. This tree, observed in 1890, is twenty or twenty-five feet high, and worthy of being included in Prof. Sargent's Silva. A hurried tramp through the woods added *Pyrola secunda*, *P. elliptica*, and what is probably *P. uliginosa*, and fine specimens of *Asplenium platyneuron*.

Altogether, 156 species were observed, with 82 on the list of actual collection. Many more might have been added, but lack of time prevented. As far as I have been able to learn, no other persons have botanized in this portion of the county, or, indeed, in any other part, unless in the extreme northeastern end about Pittston. Thorough exploration of other portions will undoubtedly yield a rich and interesting flora. On the right bank of the river, scattered about in the Catskill formation, are six or eight small lakes, and one larger one called Harvey's Lake. Some five or six miles east of Long Pond are two lakes, known locally as Mud Pond and Three-Cornered Pond, and about ten miles east of these, not far from the Lehigh Valley Railroad, is a nameless lake, the largest in the county. Just east of this lake is an elevated section of Pocono sandstone, which must have a flora very similar to that of the Pocono, as it is merely a western extension of that interesting region.

The total number of species collected in the county thus far is 325, about one-fifth of the number that ought to be found.

LIST OF SPECIES COLLECTED.

*Clematis Virginiana*, L. Above Berwick.
*Anemone Virginiana*, L. Above Berwick.
*Hepatica triloba*, Chaix. Pond Hill.
*Ranunculus acris*, L. Above Berwick.
*Ranunculus reptans*, L. Above Berwick.
*Isopyrum trifolium* (L.) Britton. Long Pond.
*Actæa alba* (L.) Mill. Long Pond.
*Cimicifuga racemosa* (L.) Nutt. Pond Hill.
*Liriodendron Tulipifera*, L. Pond Hill.
BRASENIA PURPUREA (Michx.) Long Pond.
*Hydropeltis purpurea*, Michx. Fl. Bor. Amer. 324, t. 29 (1803).
*Brasenia peltata*, Pursh, Fl. Amer., Sept. 389 (1814).
*Nymphæa advena*, Soland. Long Pond.

*Castalia odorata* (Dryand) Woodv. & Wood. Long Pond.
*Sarracenia purpurea*, L. Long Pond.
NECKERIA SEMPERVIRENS (L.) Long Pond.
*Fumaria sempervirens*, L. Sp. Pl. 700 (1753).
*Corydalis glauca*, Pursh, Fl. Amer. Sept. 463 (1814).
*Nasturtium hispidum* (Desv.) DC. Above Berwick.
*Arabis Canadensis*, L. Long Pond.
*Arabis lyrata*, L. Pond Hill.
*Lepidium Virginicum*, L. Long Pond.
*Lechea Leggettii*, Britton & Hollick. Pond Hill.
*Viola palmata*, L. Pond Hill.
*Polygala verticillata*, L. Long Pond.
*Silene stellata* (L.) Ait. Nescopeck.
*Cerastium vulgatum*, L. Above Berwick.
*Stellaria uliginosa*, Murr. Above Nescopeck.
*Tissa rubra* (L.) Britton. Above Berwick.
*Hypericum Ascyron*, L. Above Berwick.
*Hypericum ellipticum*, Hook. Above Nescopeck.
*Hypericum maculatum*, Walt. Above Berwick.
*Hypericum mutilum*, L. Long Pond.
*Hypericum perforatum*, L. Above Berwick.
*Hypericum Virginicum*, L. Long Pond.
*Tilia Americana*, L. Above Berwick.
*Geranium maculatum*, L. Long Pond.
*Oxalis stricta*, L. Pond Hill.
*Impatiens aurea*, Muhl. Pond Hill.
*Ilex verticillata* (L.) A. Gray. Long Pond.
*Ilex verticillata*, var. *padifolia* (Willd.) T. & G. Long Pond.
*Nemopanthes mucronata* (L.) Trelease. Long Pond.
*Ceanothus Americanus*, L. Pond Hill.
*Vitis cordifolia*, Michx. Above Berwick.
*Acer saccharinum*, L. Long Pond.
*Rhus glabra*, L. Above Berwick.
*Rhus radicans*, L. Pond Hill.
*Rhus typhina*, L. Above Berwick.
*Melilotus alba*, Lam. Above Berwick.
*Trifolium arvense*, L. Long Pond.
*Meibomia Canadensis* (L.) Kuntze. Above Berwick.
*Lespedeza hirta* (L.) Ell. Pond Hill.
*Lathyrus palustris*, L. Above Berwick.
*Amphicarpæa comosa* (L.) Ridd. Above Berwick.
*Apios tuberosa*, Mœnch. Above Berwick.
*Cassia nictitans*, L. Above Berwick.
*Prunus Americana*, Marsh. Above Berwick.
*Spiræa rubra* (Mill.) Britton. Above Berwick.
*Spiræa salicifolia*, L. Nescopeck, Long Pond.
*Spiræa tomentosa*, L. Long Pond.

*Rubus Canadensis*, L. Long Pond.
*Rubus hispidus*, L. Long Pond.
*Rubus villosus*, Ait. Above Berwick.
*Rubus villosus*, var. *montanus*, Porter. Long Pond.
*Geum Canadense*, Jacq. Above Berwick.
*Potentilla Canadensis*, L. Pond Hill.
*Rosa Carolina*, L. Long Pond.
*Rosa humilis*, Marsh. Above Berwick.
*Pyrus nigra* (Marsh.) Sargent. Long Pond.
*Hydrangea arborescens*, L. Above Nescopeck.
*Sedum acre*, L. Above Berwick.
*Drosera intermedia*, Drev. & Hayne., var. *Americana*, D. C. Long Pond.
*Drosera rotundifolia*, L. Long Pond.
*Proserpinaca palustris*, L. Long Pond.
*Nesæa verticillata* (L.) H.B.K. Long Pond.
*Epilobium coloratum*, Muhl. Above Berwick.
*Epilobium spicatum*, Lam. Nescopeck.
*Œnothera fruticosa*, L. Long Pond.
*Œnothera biennis*, L. Pond Hill.
*Œnothera pumila*, L. Above Berwick.
*Hydrocotyle Americana*, L. Above Berwick.
*Cicuta bulbifera*, L. Long Pond.
*Sium cicutæfolium*, Gmel. Long Pond.
*Angelica villosa* (Walt.) B.S.P. Pond Hill.
*Aralia racemosa*, L. Long Pond.
*Cornus alternifolia*, L. Pond Hill.
*Cornus circinata*, L'Hér. Pond Hill.
*Cornus florida*, L. Long Pond.
*Sambucus Canadensis*, L. Above Nescopeck.
*Sambucus pubens*, Michx. Above Berwick.
*Viburnum acerifolium*, L. Pond Hill.
*Viburnum dentatum*, L. Long Pond.
*Cephalanthus occidentalis*, L. Long Pond.
*Mitchella repens*, L. Long Pond.
*Galium asprellum*, Michx. Above Berwick.
*Galium circæzans*, Michx. Long Pond.
*Galium lanceolatum*, Torr. Above Nescopeck.
*Galium triflorum*, Michx. Long Pond.
*Eupatorium ageratoides*, L. f. Pond Hill.
*Eupatorium purpureum*, L. Pond Hill.
*Solidago arguta*, Ait. Long Pond.
*Solidago bicolor*, L. Pond Hill.
*Solidago cæsia*, L. Pond Hill.
*Solidago Canadensis*, L. Pond Hill.
*Solidago juncea*, Ait. Pond Hill.
*Solidago lanceolata*, L. Pond Hill.
*Solidago latifolia*, L. Pond Hill.

*Solidago nemoralis*, Ait. Pond Hill.
*Solidago rugosa*, Mill. Pond Hill.
*Solidago rupestris*, Raf. Pond Hill.
*Solidago serotina*, Ait. Above Berwick.
*Solidago squarrosa*, Muhl. Pond Hill.
*Aster acuminatus*, Michx. Lond Pond.
*Aster concinnus*, Willd. Long Pond.
*Aster cordifolius*, L. Pond Hill.
*Aster cordifolius*, L., var. *lanceolatus*, Porter. Long Pond.
*Aster corymbosus*, Ait. Long Pond.
*Aster ericoides*, L. Pond Hill.
*Aster infirmus*, Michx. Pond Hill.
*Aster lateriflorus* (L.) Britton, var. *hirsuticaulis* (Lindl.), Millsp. Long Pond.
*Aster linariifolius*, L. Long Pond.
*Aster Novæ-Angliæ*, L. Pond Hill.
*Aster paniculatus*, Lam. Pond Hill.
*Aster patens*, Ait. Long Pond.
*Aster patens*, var. *phlogifolius* (Muhl.) Nees. Long Pond.
*Aster prenanthoides*, Muhl. Pond Hill.
*Aster undulatus*, L. Long Pond.
*Erigeron Canadensis*, L. Long Pond.
*Anaphalis margaritacea* (L.) Benth. & Hook. Long Pond.
*Gnaphalium decurrens*, Ives. Long Pond.
*Gnaphalium obtusifolium*, L. Long Pond.
*Gnaphalium purpureum*, L. Long Pond.
*Gnaphalium uliginosum*, L. Long Pond.
*Polymnia Canadensis*, L. Pond Hill.
*Coreopsis discoidea*, T. & G. Long Pond.
*Bidens frondosa*, L. Pond Hill.
*Bidens cernua*, L. Long Pond.
*Achillæa Millefolium*, L. Long Pond.
*Chrysanthemum Leucanthemum*, L. Long Pond.
*Artemisia Pontica*, L.? Long Pond.
*Erechtites hieracifolia* (L.) Raf. Long Pond.
*Cacalia atriplicifolia*, L. Pond Hill.
*Cacalia suaveolens*, L. Nescopeck.
*Carduus lanceolatus*, L. Long Pond.
*Hieracium venosum*, L. Long Pond.
*Lactuca Canadensis*, L. Above Berwick.
*Prenanthes altissima*, L. Long Pond.
*Prenanthes Serpentaria*, Pursh. Long Pond.
*Lobelia cardinalis*, L. Long Pond.
*Lobelia inflata*, L. Long Pond.
*Lobelia spicata*, Lam. Above Berwick.
*Lobelia syphilitica*, L. Pond Hill.
*Campanula aparinoides*, Pursh. Above Nescopeck.
*Campanula rotundifolia*, L. Above Berwick.

*Gaylussacia frondosa* (L.) T. & G. Long Pond.
*Vaccinium corymbosum*, L., var. *amœnum* (Ait.) A Gray. Long Pond.
*Vaccinium disomorphum*, Bigel. Long Pond.
*Vaccinium stamineum*, L. Long Pond,
*Vaccinium vacillans*, Soland. Long Pond.
*Oxycoccus macrocarpus*, Pers. Long Pond.
*Gaultheria procumbens*, L. Long Pond.
*Epigæa repens*, L. Long Pond.
*Kalmia angustifolia*, L. Long Pond.
*Kalmia latifolia*, L. Pond Hill.
*Azalea nudiflora*, L. Long Pond.
*Rhododendron maximum*, L. Above Nescopeck.
*Pyrola chlorantha*, Sw. Above Nescopeck.
*Pyrola elliptica*, Nutt. Long Pond.
*Pyrola rotundifolia*, L. Long Pond.
*Pyrola secunda*, L. Long Pond.
*Pyrola uliginosa*, Torr.? Long Pond.
*Chimaphila umbellata* (L.) Nutt. Pond Hill.
*Hypopitys Monotropa*, Crantz. Long Pond.
*Lysimachia quadrifolia*, L. Above Nescopeck.
*Lysimachia terrestris* (L.) B.S.P. Above Berwick.
*Steironema ciliatum* (L.) Raf. Above Berwick.
*Asclepias exaltata* (L.) Muhl. Pond Hill.
*Asclepias obtusifolia*, Michx. Above Berwick.
*Sabbatia angularis* (L.) Pursh. Above Berwick.
*Gentiana quinquefolia*, L. Pond Hill.
*Bartonia Virginica* (L.) B.S.P. Long Pond.
*Phlox maculata*, L. Above Berwick.
*Phlox paniculata*, L. Long Pond.
*Phlox subulata*, L. Long Pond.
*Myosotis laxa*, Lehm. Above Berwick.
*Cuscuta Gronovii*, Willd. Above Berwick.
*Physalis Virginiana*, Mill. Above Berwick.
*Scrophularia nodosa*, L., var. *Marylandica* (L.) A. Gray. Pond Hill.
*Chelone glabra*, L. Above Berwick.
*Mimulus ringens*, L. Above Berwick.
*Gratiola Virginiana*, L. Above Berwick.
*Ilysanthes gratioloides* (L.) Benth. Above Berwick.
*Veronica Americana*, L. Above Berwick.
*Veronica officinalis*, L. Long Pond.
*Veronica scutellata*, L. Above Berwick.
*Veronica Virginica*, L. Nescopeck.
*Gerardia pedicularia*, L. Pond Hill.
*Gerardia tenuifolia*, Vahl. Long Pond.
*Melampyrum lineare*, Lam. Above Nescopeck.
*Utricularia gibba*, L. Long Pond.
*Utricularia vulgaris*, L. Long Pond.

*Dianthera Americana*, L. Above Berwick.
*Verbena hastata*, L. Pond Hill.
*Verbena urticæfolia*, L. Pond Hill.
*Mentha Canadensis*, L. Above Berwick.
*Mentha piperita*, L. Pond Hill.
*Mentha viridis*, L. Above Berwick.
*Cunila Mariana*, L. Pond Hill.
*Kœllia lanceolata* (Pursh) Kuntze. Above Berwick.
*Lycopus Europæus*, L. Above Berwick.
*Lycopus sinuatus*, L. Pond Hill.
*Lycopus Virginicus*, L. Nescopeck.
*Hedeoma pulegioides* (L.) Pers. Long Pond.
*Melissa officinalis*, L. Long Pond.
*Monarda fistulosa*, L., var. *rubra*, A. Gray. Nescopeck.
*Scutellaria galericulata*, L. Long Pond.
*Scutellaria lateriflora*, L. Long Pond.
*Physostegia Virginiana* (L.) Benth. Above Nescopeck.
*Trichostema dichotomum*, L. Nescopeck.
*Teucrium Canadense*, L. Nescopeck.
*Polygonum arifolium*, L. Long Pond.
*Polygonum emersum* (Michx.) Britton. Long Pond.
*Polygonum Hydropiper*, L. Pond Hill.
*Polygonum hydropiperoides*, Michx. Long Pond.
*Polygonum Pennsylvanicum*, L. Pond Hill.
*Polygonum punctatum*, Ell Long Pond.
*Polygonum sagittatum*, L. Pond Hill.
*Polygonum Virginianum*, L. Long Pond.
*Fagopyrum esculentum*, Mœnch. Nescopeck.
*Sassafras officinale*, Nees. Long Pond.
*Euphorbia hypericifolia*, L. Pond Hill.
*Bœhmeria cylindrica* (L.) Willd. Long Pond.
*Juglans nigra*, L. Pond Hill.
*Myrica asplenifolia* (L.) Banks. Pond Hill.
*Betula lenta*, L. Long Pond.
*Betula lutea*, Michx. f. Pond Hill.
*Betula nigra*, L. River bank, near Pond Hill.
*Betula populifolia*, Marsh. Long Pond.
*Alnus incana* (L.) Willd. Long Pond.
*Alnus serrulata*, Willd. Long Pond.
*Carpinus Virginiana* (Marsh.) Sudworth. Pond Hill.
*Quercus alba*, L. Pond Hill.
*Quercus Muhlenbergii*, Engelm., var. *humilis* (Marsh.) Britton. Long Pond
*Quercus Prinus*, L. Pond Hill.
*Salix cordata*, Muhl. Above Berwick.
*Salix tristis*, Ait. Long Pond.
*Populus grandidentata*, Michx. Long Pond.
*Leptorchis liliifolia* (L.) Millsp. Long Pond.

*Corallorhiza multiflora*, Nutt. Long Pond.
*Gyrostachys cernua* (L.) Kuntze. Pond Hill.
*Gyrostachys gracilis* (Bigel.)Kuntze. Nescopeck.
*Peramium pubescens* (Willd.) Morong. Long Pond.
*Pogonia ophioglossoides* (L.) Ker. Long Pond.
*Habenaria lacera* (Michx.) R. Br. Lond Pond.
*Habenaria psycodes* (L.) A. Gray. Long Pond.
*Habenaria tridentata* (Willd.) Hook. Long Pond.
*Cypripedium pubescens*, Willd. Long Pond.
*Dioscorea villosa*, L. Long Pond.
*Iris versicolor*, L. Above Berwick.
*Smilax rotundifolia*, L. Long Pond.
*Polygonatum biflorum* (Walt.) Ell. Pond Hill.
*Unifolium Canadense* (Desf.) Greene. Long Pond.
*Unifolium racemosum* (L.) Britton. Pond Hill.
*Lilium Philadelphicum*, L. Long Pond.
*Uvularia perfoliata*, L. Long Pond.
*Uvularia sessilifolia*, L. Long Pond.
*Medeola Virginica*, L. Long Pond.
*Pontederia cordata*, L. Long Pond.
*Xyris Caroliniana*, Walt. Long Pond.
*Juncus acuminatus*, Michx. Above Berwick.
*Juncus pelocarpus*, E. Meyer. Long Pond.
*Arisæma triphyllum* (L.) Torr. Pond Hill.
*Acorus Calamus*, L. Above Berwick.
*Alisma Plantago*, L., var. *triviale* (Pursh) B. S. P. Above Berwick.
*Sagittaria graminea*, Michx. Long Pond.
*Sagittaria variabilis*, Engelm., forma *gracilis* (Pursh) Britton.
*Potamogeton Nuttallii*, Cham. Long Pond.
*Potamogeton pusillus*, L. Long Pond.
*Eriocaulon septangulare*, With. Long Pond.
*Dulichium spathaceum* (L.) Pers. Long Pond.
*Eleocharis acicularis* (L.) R. & S. Long Pond.
*Eleocharis olivacea*, Torr. Long Pond.
*Eleocharis palustris* (L.) R. & S. Long Pond.
*Rhynchospora alba* (L.) Vahl. Long Pond.
*Carex intumescens*, Rudge. Pond Hill.
*Carex lurida*, Wahl. Pond Hill.
*Panicum dichotomum*, L. Nescopeck.
*Panicum scoparium*, Lam. Nescopeck.
*Panicum virgatum*, L. Above Berwick.
*Andropogon provincialis*, Lam. Above Berwick.
*Agrostis perennans* (Walt.) Tuck. Long Pond.
*Bromus secalinus*, L. Above Berwick.
*Hystrix patula*, Mœnch. Long Pond.
*Pinus rigida*, Mill. Pond Hill.
*Pinus Strobus*, L. Pond Hill.

*Tsuga Canadensis* (L.) Carr. Pond Hill.
*Lycopodium annotinum*, L. Pond Hill.
*Lycopodium inundatum*, L. Long Pond.
*Lycopodium lucidulum*, Michx. Long Pond.
*Ophioglossum vulgatum*, L. Long Pond.
*Botrychium ternatum* (Thunb.) Sw., var. *obliqum* (Muhl.) Milde. Pond Hill.
*Botrychium Virginianum* (L.) Sw. Long Pond.
*Polypodium vulgare*, L. Nescopeck.
*Pteris aquilina*, L. Long Pond.
*Adiantum pedatum*, L. Long Pond.
*Asplenium Filix-fœmina* (L.) Bernh. Long Pond.
*Asplenium platyneuron* (L.) Oakes. Long Pond.
*Asplenium Trichomanes*, L. Pond Hill.
*Camptosorus rhizophyllus* (L.) Link. Pond Hill.
*Phegopteris connectilis* (Michx.) BSP. Long Pond.
*Phegopteris Dryopteris* (L.) Feé. Pond Hill.
*Phegopteris hexagonoptera* (L.) Feé. Long Pond.
*Dryopteris acrostichoides* (Michx.) Kuntze. Long Pond.
*Dryopteris Novaboracensis* (L.) A. Gray. Long Pond.
*Dryopteris dilatata* (Sw.) A. Gray. Long Pond.
*Dryopteris Thelypteris* (L.) A. Gray. Long Pond.
*Cystopteris fragilis* (L.) Sw. Pond Hill.
*Onoclea sensibilis*, L. Above Berwick.
*Woodsia Ilvensis* (L.) R. Br. Pond Hill.
*Woodsia obtusa* (Spreng.) Torr. Long Pond.
*Dicksonia punctilobula* (Michx.) A. Gray. Long Pond.
*Osmunda regalis*, L. Long Pond.
*Equisetum limosum*, L.? Long Pond.
*Equisetum sylvaticum*, L. Above Berwick.

## On Rusbya, a New Genus of Vacciniaceæ from Bolivia.

By N. L. Britton.

Among the most interesting features of the vegetation of the the Eastern Cordillera of the Andes is the group of epiphytic genera of Vacciniaceæ. Dr. Rusby obtained a number of them, and those here described are different from the rest in the presence of stipules, a feature hitherto unrecorded in either Ericaceæ or Vacciniaceæ. The genus here proposed will in a measure commemorate his arduous and eminently successful work in exploring a difficult region, and one hardly before visited by a botanist.

RUSBYA, gen. nov.

Calyx tube continuous with the peduncle; campanulate, 5-angled; the limb erect, 5-lobed; lobes triangular, acute or acuminate; corolla tubular, narrowed above; stamens 10, nearly equalling the corolla; flowers otherwise as in *Themistocleia* Klotsch.

Glabrous or minutely pubescent epiphytic shrubs, with slender, densely leafy branches; branchlets distinctly marked by the leaf-scars; leaves coriaceous, short-petioled, linear or ovate, obtuse, minutely apiculate, stipulate; stipules persistent, setaceous; flowers small, solitary, slender-peduncled; peduncles minutely bracted near the base.

Two species, natives of Eastern Bolivia:

1. R. TAXIFOLIA.—Branchlets glabrous; leaves narrowly linear, one-nerved; peduncles 2 or 3 bracteate above the base.

   Yungas, Bolivia, Rusby, No. 2692; M. Bang, No.

2. R. PEARCEI.—Branchlets pubescent; leaves ovate or ovate-lanceolate, pinnately nerved or indistinctly 3-nerved; peduncles 1 or 2 bracteate at the base; flowers red.

   Pintae (Pintoe), Bolivia, 10,000–11,000 ft., R. Pearce, Feb. 1867, Herb. Kew.; 4–6 ft. long on trees, Sandillani, 8,000–9000 ft., 1866, R. Pearce, Herb. Kew. Sir Joseph Hooker notes the presence of stipules on one of these Kew sheets.

## Botanical Notes.

*A New Station in New York State for Saxifraga aizoides, L.*—This plant has been recorded as growing in but three or four places in this State. During a collecting trip, I found the plant growing in considerable abundance upon the dripping cliffs below the falls in Salmon River, Town of Orwell, Oswego Co. The nearest station known is the east branch of Fish Creek, Oneida Co., twenty miles away, where it was discovered many years ago by Knieskern and Vasey, and observed later by John A. Paine, Jr. (Cat. of Plants found in Oneida Co. and Vicinity 1865, p. 31). The west branch of Fish Creek and Salmon River have their sources very near together; the former, however, flows south into Oneida Lake; the

latter, west into Lake Ontario. Salmon River falls (110 ft. high) are in the south-eastern part of the town of Orwell. The river, at the place where the fall occurs, flows west, exposing the face of the cliff upon the north side of the ravine to the sun. It is upon this sunny southern exposure that the plant in question grows. A few plants were still flowering September 9, 1892. The mist from the falls and the water from the dripping rocks above keep the atmosphere moist and cool.

*Potentilla fruticosa* also grows pendent from the rocks with the Saxifrage, and at a distance somewhat resembles it.

*Primula Mistassinica* also occurs in the same place.

I searched very carefully for *Pinguicula vulgaris* but was unable to detect it, and have since found out that while it has been found at Taughhannock and at Portage with *Saxifraga* it has not been reported from the Fish Creek station. W. W. ROWLEE.

*An International Botanical Congress.*—Since the meeting of the botanists at Rochester, last August, it has become evident that an International Botanical Congress should be held in 1893 in this country. Upon the return of Professor Underwood from Genoa, with his report of what was done there, as well as of what was left undone, such a Congress seemed a necessity, especially when it was learned that the delegates to the Genoa Congress expected one to be held in America this year, in order to complete the work left by them. The Columbian Exposition will doubtless bring many botanists to this country during the year. Most of these will attend our scientific meetings, if possible, and it seems wise to take advantage of this, and to arrange for a formal Congress. There being no committee to take charge of the work of preparing for the Congress, after a consultation with a number of botanists, it was thought advisable that the chairman of the Section of Botany of the American Association for the Advancement of Science, and the President of the Botanical Club, Dr. Wilson, should appoint a committee to take the matter in hand. Accordingly, on December 9th, notices were sent to the following gentlemen with the request that they serve on such committee: J. C. Arthur, L. H. Bailey, N. L. Britton, D. H. Campbell, J. M. Coulter, B. T. Galloway, Conway MacMillan, B. L. Robinson, William Trelease, L. M. Underwood, George Vasey.

May I not ask that a hearty support be given to the committee by every botanist, to the end that the Congress may be every way successful. CHARLES E. BESSEY,

Chairman Section G (Botany) A. A. A. S.

*Amarantus blitoides*, S. Watson. During last summer (1892) I discovered a single plant of *Amarantus blitoides*, growing along the track of the C. R. R. of N. J., about a-half mile south of the Sewaren, N. J., station on Long Branch Division. This plant is new to the 100-mile range, and the seed had evidently been brought by the cars. The plant was large and full of bloom, so that, no doubt, the locality will be permanently established. This species belongs in the far West, but I believe it has been reported by D. F. Day, as introduced into the neighborhood of Buffalo, N. Y. Professor Halsted tells me that he has seen it about New Brunswick, N. J. L. H. LIGHTHIPE.

*Viburnum prunifolium*, L. var. *globosum*; Geo. V. Nash, n. var.—This differs from the type in several particulars. The most conspicuous one is in the fruit, which is globose, and but little more than half as large—about $\frac{5}{16}$ of an inch. It differs also in the smaller cymes, and in its divaricately branching habit. The specimen I found only grew five or six feet high. The flowers appear before the leaves, and it was this which first drew my attention to it, and led me to watch it for further differences.

Others may have found this variety also, and it is only reasonable to suppose they have. I found it in a section where the type grows in abundance, and it is strange that this variety has never been noted before. There is nothing in the Columbia College Herbarium like it, nor do I find reference in any work to such a form. GEO. V. NASH.

CLIFTON, N. J., Dec. 12, 1892.

## Proceedings of the Club.

TUESDAY, JANUARY 10, 1893.

Annual meeting. The president in the chair and twenty-eight persons present.

The committee appointed to draw up resolutions on the life

and works of Professor John Strong Newberry, submitted the following:

*Resolved*, That in the death of Dr. Newberry the Torrey Botanical Club has lost an invaluable leader and friend. He was for ten years our president. Under his inspiring leadership the Club was greatly enlarged in numbers, in the scope of its aims, and in its scientific work. From his earliest days he followed assiduously the paths of science in many fields and in many ways; as student, as traveller, as explorer, as collector, as author, investigator, organizer and teacher. He was eminent in all, but especially in his favorite pursuits of Geology, Palæontology and Botany. He united many of the qualities of the greatest scientists; an inextinguishable thirst for knowledge, an enthusiastic love of nature, indefatigable industry, keen and wide observation, an exact and retentive memory, and a reflecting and discriminating judgment, that pondered and weighed with calm and philosophic care all questions, great and small, which a vast accumulation of material in a life of reading, study and observation, brought to the tribunal of his philosophic judgment. These great qualities enabled him to do much for Science, and, added to great aptness and facility in lucid exposition, placed him among the foremost of instructors. We owe his memory an endless obligation. At the meetings of the Club he contributed information on every branch of Botany, stimulating inquiry, and enriching his remarks from vast stores of information, drawn from many fields of scientific research, and from the recollections of extensive travels, in which nothing observed seemed ever forgotten.

Personally, he was the most charming of associates, the warmest and most loyal of friends. Many a young student will miss the encouragement of his suggestions, and older ones the advantages of his gentle and helpful criticisms. He will be remembered as scholar, thinker, investigator, and educator; a most true gentleman, a noble intellect, a great heart overflowing with the broadest charity.

*Resolved*, That the sympathies of the Club be extended to the widow and family of the deceased; and that a copy of these resolutions be forwarded to them, and entered upon the minutes of the Club.

Committee { ADDISON BROWN,
N. L. BRITTON.

Dr. Rusby announced the death on December 30, of Mr. Thomas Hogg, long an active member of the Club, and for many years one of its Vice Presidents, and remarked on his life and valuable services to American Botany and especially to Horticulture. The President

referred to the great loss which the Club had sustained, both in a scientific and a social way. It was resolved that a Committee of three be appointed by the President to prepare suitable resolutions. The President appointed as such Committee, Mr. E. S. Miller, Mr. Arthur Hollick, Rev. L. H. Lighthipe.

A letter from Prof. C. Henry Kain announced the sudden death in Camden, N. J., of Mr. I. C. Martindale, one of the Club's most distinguished corresponding members, and gave a brief sketch of his life and works. The President remarked upon his personal acquaintance with Mr. Martindale and testified to his high personal qualities and scientific attainments.

Mr. A. A. Heller, of Lancaster, Pennsylvania, was elected an active member.

Reports of the officers for last year were presented and accepted. The Recording Secretary reported 168 active members on the roll, an increase of 25 during the year; the average attendance at regular meetings was 27. The Treasurer reported the total income of the Club during the year as $1448.24. The Editor reported that the number of pages in the 19th volume of the BULLETIN, published during the year, was 392, an increase over the preceding volume of 12 pages; No. I. of the 3d volume of the MEMOIRS was issued in February; No. II., containing Dr. Morong's revision of the North American Naiadaceæ, is in press. The Curator reported 3,492 specimens in the Herbarium, all from within the 100-mile circle.

The following officers for the year 1893 were then unanimously elected:

President, Hon. Addison Brown; Vice-Presidents, Dr. Timothy F. Allen and Dr. Thomas Morong; Treasurer, Mr. Henry Ogden; Recording Secretary, Dr. H. H. Rusby; Corresponding Secretary, Mr. John K. Small; Editor, Dr. N. L. Britton; Associate Editors, Dr. Emily L. Gregory, Miss Anna Murray Vail, Mr. Arthur Hollick, Prof. Byron D. Halsted, Mr. A. A. Heller; Curator, Miss Josephine E. Rogers; Librarian, Miss Effie A. Southworth.

The President appointed the following standing committees: Committee on Finance, Mr. Justus F. Poggenburg, Mr. Wm. H. Rudkin; Committee on Admissions, Mr. M. M. Le Brun, Mrs. S. B. Clarke; Library and Herbarium Committee, The Curator, the

Libarian, Miss C. A. Timmerman, Rev. L. H. Lighthipe; Committees on the Local Flora, Phanerogamia, Dr. Thomas C. Porter, Dr. N. L. Britton, Dr. H. H. Rusby; Cryptogamia, Elizabeth G. Britton, Maria O. Le Brun, Dr. Smith Ely Jelliffe.

Prof. Byron D. Halsted read the announced paper of the evening, "Some Results of a Study of Fruit Decays," illustrated by diagrams. An abstract of the paper will be published in a subsequent number of the BULLETIN. Prof. Halsted exhibited a set of his distribution of 100 species of American weed-seeds, an account of which appears in the present BULLETIN.

Mr. Lighthipe exhibited *Amarantus blitoides* from Sewaren, N. J. (See note on p 70)

WEDNESDAY, JANUARY 25TH.

Dr. Morong in the Chair and 29 persons present. Dr. Britton was elected Secretary *pro. tem.*

Prof. H. W. Conn, of Wesleyan University, was elected an active member.

The following papers were read and illustrated by specimens and maps:

"Some new Species of Characeæ," by Dr. T. F. Allen (to be published in a subsequent number of the BULLETIN).

"Preliminary Report on the Flora of Luzerne County, Penna.," by Mr. A. A. Heller (published in the present BULLETIN).

"The Mosses of White Top Mountain, Virginia," by Mrs. N. L. Britton. This will be incorporated in the account of the exploration of Southern Virginia prosecuted during the last summer, to be published in a number of the MEMOIRS.

The Secretary stated that the memorial of Dr. Newberry would be presented at the second February meeting, and that Mr. J. H. Redfield had prepared an article on the life of Mr. I. C. Martindale, which would be printed in the March BULLETIN.

## Reviews of Foreign Literature.

*A Monograph of the Myxogastres.* By George Massee. (Methuen & Co., London, 1892. 359 pages and 12 chromo lithograph plates containing 313 figures.)

An introductory portion, occupying twenty-seven pages, is occupied by a discussion of the affinities and classification of the group. De Bary's statement regarding want of relationship between this group and the fungi are matched off against each other and finally dismissed as self-contradictory.

The writer then draws a parallel between the methods of growth in the Myxomycetes and Mucorini, and judges that this is sufficient to indicate affinities, quoting from De Bary: "We find it impossible to establish any strict homologies, but are limited to resemblances in form, structure and mode of life." That the similarities are sometimes striking cannot be denied, but that they should be interpreted as indicating affinity (community of descent) is by no means clear. It may be that Mr. Massee is acquainted with some other kind of affinity, not involving descent, and that the groups under discussion have this kind; indeed, it must be so, for if not there is a direct clash between this part of the discussion and one of his conclusions, which says: "There is no evidence in favour of the supposition that the Myxogastres are degenerated members of the vegetable kingdom, whereas the idea that fungi originated by differentiation from chlorophyll-bearing plant ancestors is generally admitted."

How this very definite and very desirable conclusion was extracted from any part of the previous discussion is an exceeding great mystery, but the curious can find it and four other conclusions, some even more mysterious, drawn up and numbered on page 21.

The introductory portion of the book is, however, as a whole, interesting. The existence of hybrids between species of Myxomycetes is described, and a list given of the colors of the plasmodia of a considerable number of species. Many quotations from various investigators are here collated, and though sometimes used in ways never contemplated by their authors, are still valuable to those to whom the original works are not easy of access. Mr. Massee has settled many important points to his own satisfaction, but has ignored many facts and distinctions which will prevent his conclusions being widely or permanently accepted. For example, the terms sporangium, plasmodiocarp and æthallium, are used with the most thorough indiscrimination. On page 26 *Tubulina cylin-*

*drica* and fasciculate *Trichiaceæ* are spoken of as æthallia. The six species of *Lycogala* are each described as plasmodiocarp, while the generic characterization begins: "Sporangia æthallioid, grouped together in an intricate manner, and forming a large plasmodiocarp inclosed in a thick, common cortex." These terms might easily have been dropped if there had been no wish to preserve the distinctions which they imply, but no, they are again and again used, with the most bewildering impartiality, all three terms in one sentence describing the same organisms. This condition is, of course, fruitful in peculiarities of classification and arrangement.

It is, however, as a systematic work that this volume might be supposed to have its importance. As the author remarks in the preface, his facilities in the way of material and types were exceptional, and hence the hope of a work of exceptional value was not unwarranted. The typographic beauty of the book increases the anticipated joy of using it, and the plates are the first to convey an idea of the delicate and curious beauty of form and color in this group. Fault has been found with these plates, and especially with the coloring, but it must be said that, as a whole, compared with previous publications, the plates are well calculated to suggest correct ideas of the organisms they represent. And there is another reason why these plates should be praised—they are the one redeeming feature of the book.

It is a most uncomfortable realization that from what might have been a great addition to the literature of one's favorite group there can come only increased confusion, and yet to say that the whole systematic portion of this work is entirely unreliable, and careless to the last degree, is the only way in which the truth can be told. It is the result, no doubt, of much labor, and contains a great and valuable supply of information; in fact, we must take it in spite of its defects as the only comprehensive and recent work on the subject; yet we can never have certainty nor even strong confidence in any statement, no matter how definite. The grossest carelessness pervades it, in the most important as well as the most trivial matters, so that it must be interpreted with the most careful eclecticism.

An amended edition is not likely to be issued, and we must make the best of the present one. As a help in doing this the

following remarks and corrections are collated from a copy of the work of which parts have been given practical trial. That the supply of errors is in any way exhausted is not to be supposed, for each attempt at use in determination unearths a large crop of mis-statements and oversights.

In the first place there are hosts of small blunders—typographical errors they might, perhaps, be called, if they were not so numerous and confusing. Errors in the spelling of scientific names occur as follows:

*Siphotychium* (p. 31, also p. 34), for *Siphoptychium*; *Ellisiana* (p. 98), for *Ellisianum*, to agree in gender with *Lamproderma; robusta* (p. 99), for *robustum; cinera* (p. 150), for *cinerea; Trevelyana* (p. 202), for *Trevelyani*, the original name; *melanospora* (p. 325), for *melanosperma*, the original name; *dealbata* (p. 207), for *dealbatum; Ceinkowskia* (p. 197, p. 307, p. 336 and p. 337, twice), for *Cienkowskia*. In the preface and index this generic name is spelled correctly.

And the arithmetic is no better than the spelling. Of twenty-five genera containing more than one species the number of species is wrongly stated in eight: *Tubulina* 11 (correct number, 12); *Enteridium* 3 (5); *Clathroptychium* 3 (4); *Cribraria* 19 (20); *Stemonitis* 23 (24); *Perichæna* 9 (10); *Ophiotheca* 9 (10); *Badhamia* 18 (17). The author says, "Species 3," under *Reticularia*. As only *R. lycoperdon* appears, we must infer that one species was counted three times, or that the other two were lost, perhaps by the printer. It is, of course, a matter of small importance whether the number of species is correctly given so long as the species are correctly described. The above facts suggest, however, the very important question whether the author was in the same state of mind when he counted (?) the lines on his micrometer as when he failed to count his species.

In the matter of citation of authorities for specific binomials this is a pioneer work. All the systems previously proposed seem to be used in different places, and several new ones. Through this peculiar combination of methods the result is reached that more than a quarter (118 out of 427) of the species have after them the expressive abbreviation "Mass." But all theories fail of a complete explanation of this great massacre of ancient authorities and old friends.

For example, we have *Arcyria cinerea*, Mass. Now Bulliard applied this specific name in 1791, and Schumacher used the binomial in 1803, and nearly all authors since then have recognized this form and name. What is still more remarkable, *A. pomiformis* is reduced to a synonym under *A. cinerea*, though antedating that species by three years. There is also *Stemonitis typhina*, Mass., a binomial applied in the Flora Germanica in 1788. About ten more cases of this kind might be mentioned, where neither the author of the specific name nor of the binomial is cited, but some third party. The general tendency seems to be to recognize the "first name under the genus," but all kinds of tastes in such matters are consulted, as, for instance, *Ophiotheca circumscissa*, Currey (p. 131). According to the synonymy the name Currey used was *chrysosperma*, Wallroth being the author of *circumscissa*, and Rostafinski having first made the present combination.

Those for whom "the first name under the genus" has no special sanctity will write (p. 98) *Lamproderma penetrale* (Cke. & Ellis), instead of "*L. Ellisiana Cke.*" Having decided that *Trichia persimilis*, Karsten, and *T. intermedia*, Massee, are the same, *intermedia* stands as the species, and *persimilis* is down as a synonym, though antedating the other name by twenty-one years.

On page 191, in a note under *Trichia verrucosa*, Berk., is mentioned *T. dictyospora*. No species of this name is described, figured or mentioned in the index. The note in which the name occurs is taken by the author from his "Revision of the Trichiaceæ," and on the same page of that paper, in a note on *T. chrysosperma* is another mention of this name, *dictyospora*, and still another, *T. Archeri*. There seems to be no other mention of these species, which leaves us in doubt as to whether they were lost, strayed, or stolen. It may be that Mr. Massee had intended to apply his name, *Archeri*, to *L. verrucosa*, and *dictyospora*, to *T. Kalbreyeri*, but this is only a guess.

The species published by Rostafinski as *Chondrioderma subdictyospermum* appears as *C. dealbatum* Mass., with a reference to "Didymium dealbatum B. and C., in Herb. Berk. n. 10,756." Concerning this change the author remarks: "There appears to be no good reason why Berkeley's specific name, though only a

manuscript one, should have been changed by Rostafinski. Well, if the unreasonableness of supplanting a published name by a "manuscript one" is not evident to Mr. Massee, why did he not restore *Stemonitis trechispora* B. and C. for *S. dictyospora*, Rost., on page 83? Can it be that the cause of this inconsistency was that *dealbatum* could be put into another genus and have "Mass." after it? The fact that "Mass." is written for every cause and no cause preserves us from this suspicion, but leaves us no theory for explaining the difference in the treatment of two exactly parallel cases.

On page 231 is *Didymium neglectum*, Mass. (nov. sp)." The fact that this name had been used by Berkeley for a species considered by our author, (p. 224) to be synonymous with *D. squamulosum*, was perhaps overlooked by him—perhaps not. Considering the variability of *D. farinaceum* the characters on which the new species rests are of very uncertain value, but if it should prove to be distinct it might be well to call it *D. Masseei.*

It is always well to have a species sufficiently described, but *Didymium flavidum*, Peck, is especially honored in being described twice, the first description (p. 247) purporting to be based on an "Authentic specimen from Peck, in Herb., Kew," while the second (p. 251) is a copy of Peck's original description placed under the remark, "Owing to imperfect diagnoses and absence of type specimens, the following cannot be arranged in their respective sections."

Appropriate names are a pleasant aid to the memory, but this is hardly sufficient to justify what we find on page 263, where having decided that three species of *Craterium*, *vulgare*, *pyriforme*, and *minutum*, should be looked upon as one, our author writes them all down as *C. confusum*, Mass.! Well, the species had had eight or ten names before, so that an additional one is a matter of no great importance. Sticklers for priority will probably call the species *C. minutum* (Leers)—if they agree that the three are properly merged. There is another *Craterium minutum* (p. 273) described by Kickx, which name must, of course, be changed.

*Physarum compressum* is given as a synonym of *P. nefroideum* (p. 286), but later on (p. 291) there is a long discussion as to whether it is not the same as *P. Phillipsii.*

*Badhamia varia*, Massee (p. 319), is another new name made under the same circumstances as *Craterium confusum*. It includes *Badhamia hyalina, capsulifera, utricularis* and *magna*. The author is probably correct in uniting these species, but his new name will scarcely be accepted in this age of the world.

Even a casual discussion of the classification would occupy so much space that one must be contented merely to state here the opinion that the group *Peritrichiæ* includes organisms having only the most slender geometrical similarities, and that a natural arrangement would compel a division into several orders, coördinate with the other three.

The genera *Licea* and *Lindbladia* are united to *Tubulina*, though these are as well-defined as most of those that remain. The value of a character is to be sought in its constancy, not in its size, and its importance may not be impaired in one group, because it is variable in another. By reason of the fact that the genus *Licea* is no longer recognized, the following note under *Tubulina Lindheimeri* is curious: "The type specimen is so thoroughly crushed that it is impossible to say whether the plant is a *Licea* or a *Tubulina*, but in all probability the latter, as there appear to be indications of the bases of crowded sporangia."

*Physarum cæspitosum*, Peck, is referred to *Tubulina*. *T. microspora* Cke. (Grevillea, xvi. 116) is not described as a species, nor mentioned as a synonym.

Regarding the validity of Mr. Wingate's family *Orcadellaceæ* the author says: "I am afraid that such trivial characters are admitted as sufficient for family characteristics, those left for generic distinctions will be reduced to inappreciable quantities." This solicitude for generic distinctions is very commendable, but it should not have prevented the realization that *Orcadella* is about as different from its so-called relatives as a Myxomyces without columella and capillitium could well be.

Rostafinski's genus *Heterodictyon* is united, probably with great propriety, to *Cribraria*.

*Stemonitis* and *Comatricha* are united under the former name. The distinctions previously alleged between these genera were purely imaginary, and it is well not to separate the species until better reasons can be found for so doing

In this group we have a good example of the author's ideas and methods of classification. The major divisions of the Myxomycetes are first (p. 30) called orders, and their divisions sub-orders, but here (p. 69) we have the *Columelliferæ* spoken of as "the present section," and then "the two sub-sections." On page 71 we have the formal headings, "Sub-sect. *Stemonitæ*" and "Sub-sect. *Lamprodermæ*," but no distinctions between the two are alleged. Under the first "sub-sect." are *Stemonitis*, *Siphoptychium*, *Amaurochæte*, *Brefeldia*, *Rostafinskia* and *Reticularia*; under the *Lamprodermae* come *Enerthenema*, *Ancyrophorus*, *Lamproderma*, *Echinostelium*, *Raciborskia*, and *Orthotricha*. Under the description of *Lamproderma* we read, "closely allied to *Diachaea* and *Stemonitis*, but differing from both in having the threads of the capillitium originating from the apex of the columella only." On the next page, under the first species, *L. violaceum;* "a very distinct and beautiful species, characterized by having the sporangium flattened and umbilicate, and the almost colorless capillitium springing from every part of the columella." Thus the first species does not possess the only distinctive generic character, and would be a *Stemonitis* if the definitions were strictly applied, and yet, by the arrangement here followed, five genera come between *Lamproderma* and *Stemonitis*, none of which bear any very close relation to either. *Siphoptychium* has been supposed to find its nearest ally in *Tubulina*, and the author goes so far as to suggest its descent from *Tubulina cylindrica*, or some closely allied form, and yet he puts it in another order, between *Stemonitis* and *Amaurochaete*, to neither of which it has any affinity, except the other kind which does not involve descent.

*Ancyrophorus* is a recently described genus from Denmark, allied to *Enerthenema*, but with the capillitium springing from the upper part of the columella as well as from its discoid apex. There is an undescribed American species.

*Orthotricha microcephala*, Wingate, has been reduced by Schröter to *Clastoderma Debaryanum*, A. Blytt, but this genus is not mentioned, nor the species either, in the present work, though Schröter's reduction was published in 1889.

If there are any valid distinctions of generic importance between *Raciborskia* and *Orthotricha* they are not made plain by the

descriptions, and it is the opinion of Raciborski that the two may prove to be identical, yet in a note after *Orthotricha* Mr. Massee says: "I am not at all convinced in my own mind as to whether the present genus belongs to the present division or to the *Peritricheæ*." Which member of that very heterogeneous group could be imagined to have any affinity with *Orthotricha* is hard to guess, but then affinity seems not to be a necessary qualification for admission into the *Peritricheæ*.

The next "Order," *Calotricheæ* is a rather compact one, but the limits of the included genera are utterly undefined, if we are to believe the author's statements. *Dermodium* is reduced to *Lycogala*, with the suggestion that *D. conicum* is nothing more than *Lycogala epidendrum*. *Hemiarcyria* is reduced to *Arcyria!* To reduce it to *Trichia* would appear warrantable, and to reduce the three genera, and some others, to one, would be consistent, but there is little convenience and less reason in the present arrangement. To keep the number of genera the same, perhaps, we have a new genus, *Heterotrichia*, from South Carolina. All the characters alleged are possessed in greater or less degree by species in other genera. *Hemiarcyria* is a much better genus, in that its characters are more important and constant. *Hemiarcyria Ellisii*, Mass, separated from *H. rubiformis* solely on account of its warted spores, has been re-united with that species.

In only four species of *Trichia* is the number of spirals given. Counting the spirals is rather bothersome business, and the author is apparently not fond of mathematical exercise of this kind; still, he might have given the figures as others have counted them.

Rostafinski's distinction between *Didymium* and *Chondrioderma* was sufficiently flimsy, alleging that the sporangial walls in in *Didymium* always bear *crystals* of lime, while those of *Chondrioderma* have a more or less compacted coating of amorphous *granules*. Reference to crystals is now dropped, leaving the only distinction in the relative compactness of the lime. Under the Rostafinskian method species were sometimes undecided in their generic preferences, but by the new arrangement it will be often difficult to tell where an individual should go, for example, *C.* or *D. spumarioides* is frequently covered above by a smooth plate of lime, while on the sides and base the lime is in the form of scales, or even a fine powder.

*Chondrioderma ochraceum*, Schröter, has the lime in furfuraceous condition, but for some reason (?) did not go with its relatives into *Didymium*.

*Chondrioderma* and *Physarum* seem to get very close together. *P. brunneolum* has a polished, porcelain-like wall, and lime in the knots of the capillitium, and what is worse the lime has the form prescribed for *Badhamia!* The next species leans strongly toward *Tilmadoche*, and the second toward *Craterium*.

In the way of variety of terms nothing more would be asked. There is "sporangium," "peridium," "perithecium," "pileus," and "capitulum" (p. 234), though this last seems to be a slip for "capillitium." On page 282, third line from bottom, "capillitium" probably means "columella;" and on 192, eight lines from bottom, "spores" should, to make sense, read "spines."

On page 349, among explanations of plates, "*Cribraria macrocarpa*" seems to be a mistake for "*C. microcarpa*," a very different species.

The index is incomplete, and even the alphabetic arrangement is in places out of joint.

One finds, on referring to the "Descriptions of Figures," that numbers 85 and 86 are "*Badhamia fusca*, Mass." It appears to be a fine species, and we should be glad to know more of it, but alas, there is no more, no *Badhamia*, or other species, of that name, no synonym, nothing in the index. Perhaps it is an error for *fusca*? No, there is a *Stemonitis*, and an *Arcyria*, of that name, but no *Badhamia*.

There are a few remarks which may become classic. Here are two mild samples: "Sometimes two or three sporangia are seated on a common stem, forming a plasmodiocarp." The following concerns *Fuligo varians*: "In the plasmodium condition often occurring amongst dead leaves as a bright yellow soft moss."

Why argue longer about the affinities of the group?

## Index to Recent Literature Relating to American Botany.

*Aganisia ionoptera* (Bot. Mag. t. 7270).

*Agave angustissima*. J. N. Rose (Gard. and For. vi. 5, 6; illustrated).

*Alloplectus Lynchei* (Bot. Mag. t. 7271).

*Aster turbinellus.* (Gard. and For. vi. 16; illustrated).

*Black-rot der Reben—Die Bekämpfung der.* (B. T. Galloway (Zeitscr. Pflanzenkrank. ii. 257, 258).

*Botanical Notes from Texas.* E. N. Plank (Gard. and For. vi. 15, 16).

*Botanical Section, Rochester Academy of Sciences—Report of.* Miss J. H. McGuire. (Proc. Roch. Acad. ii. 44–48).

Record of numerous localities for plants in the vicinity of Rochester, N. Y., among them *Crepis biennis*, shown by Miss Macauley from near Fairport.

*Californian Plants—Two new.* F. T. Bioletti (Erythea, i. 16, 17). *Gnaphalium bicolor* and *Collinsia Franciscana.*

*Catalogue of the Phanerogams and Ferns of Licking County, Ohio.* Herbert L. Jones. (Bull. Sci. Lab. Denison University, vii. 1–102, with map).

A neatly printed list of 945 species and varieties, giving habitats, time of flowering and localities for the newer species.

*Champia parvula—Development of the Frond from the Carpospore.* B. M. Davis (Ann. Bot. vi. 339–353; one plate).

*Claytonia—Distribution of the Seed in.* J. C. Willis (Ann. Bot. vi. 382, 383; three figures.

*Compositæ, Observations on the, I.*—Edw. L. Greene (Erythea, i. 1–4).

A discussion of the Tribe Vernoniaceæ. *Stokesia lævis* (Hill) Green is the proper designation of *S. Cyanea*, L'Her.; *Vernonia crinita*, Raf. (1836) must replace *V. Arkansana*, D. C. (1838).

*Contributions from the Botanical Laboratory of the University of Pennsylvania.* (Vol. i. No. 1, 800, pp. 73; thirteen plates; Philadelphia, 1892).

Another medium for the presentation of the results of botanical research has been inaugurated by the officers of the department of botany in the University of Pennsylvania. The part here noticed was received some weeks ago, and would have been reviewed before but for unusual demand on the time of the editor of the BULLETIN. It contains seven papers (I). a monstrous specimen of *Rudbeckia hirta* by Professor Rothrock, with two plates illustrating a remarkable instance of folial and floral prolification; II. contributions to the history of *Dionæa muscipula*, by Dr. Mac-

farlane (reviewed by Dr. Bashford Dean in the January BULLETIN) III. An abnormal development of the Inflorescense of *Dionæa*, by Mr. J. W. Harshberger; IV. Mangrove Tannin, by Professor Trimble, a chemical study; V. Observations on *Epigæa repens* by Professor Wilson, a critical investigation of the different kinds of flowers produced by this plant; VI. A Nascent Variety of *Brunella vulgaris*, by Professor Rothrock; VII. Preliminary observations on the movements of the leaves of *Melilotus alba* and other plants, by Professor Wilson, assisted by Jesse M. Greenman, a subject which Prof. Wilson has been investigating for several years. He maintains as one of his principal results that the *hot sun* position, in which leaves point directly towards the sun, is a phenomenon brought about by an endeavor to reduce the amount of transpiration, and is dependent not on light alone, but also to a large degree on heat.

The "Contributions" are a most welcome addition to our list of serial publications, and we hope they may be of frequent appearance. N. L. B.

*Echinocactus myriostigma.* (Gard. Chron. xii. 789, fig. 120).

*Erythea, a Journal of Botany, West American and General.* Edited by Willis Linn Jepson and others, of the Department of Botany, University of California.

The remarkable increase in interest in and the study of the Science of Botany during the past few years is well illustrated by the increased number of journals specifically devoted to presenting the results of that study. This is true, both of the Old World and the New. Since 1885 more than fifteen different serial publications have been commenced, and, we believe, all the older ones have been continued, and, for the most part, increased in size and circulation. And it is evident that the end of this process is not yet, for the pressure on the pages of the journals is continually augmenting.

We, therefore, cordially welcome any new enterprise, begun under competent direction, which will facilitate the presentation of botanical information.

No. 1, Vol. i, of "Erythea" is an octavo pamphlet of twenty-eight pages, issued at Berkeley, California, in January, 1893. "Short articles, the results of local investigations in the field and

laboratory, will be published in every number, and will give, as is intended, a distinctively West-American character to the journal; it is not the purpose, however, to exclude communications from any part of the world, nor to neglect any department of botanical research."

The number contains two papers by Prof. Greene, and also an adverse criticism by him on Mr. Berthoud's recent paper on the dissemination of plants by the buffalo; two papers by the editor, Mr. Jepson, one by Mr. F. F. Bioletti, and one by Mr. Marshall O. Howe, besides several reviews and a chapter of "Notes and News." The subscription price is $1.50 per year. We presume the journal will be issued monthly, but there is no indication of the frequency of publication in the number which lies before us. N. L. B.

*Galax aphylla.* (Gard. and For. v. 604, with figure).

*Gottsche, Dr. C. M., Obituary.* W. H. Pearson (Journ. Bot. xxx. p. 3).

This is a most interesting account of the eminent Hepaticologist, who has contributed so much to the knowledge of the liverworts of Mexico, Central America and the West Indies.

*Ipomœa tuberosa.—A Drift seed of.* W. B. Hemsley (Ann. Bot. vi. 369–371; one plate).

Record of the finding of the seed of this tropical species on the Hebrides.

*Juneberries.—The.* G. Nicholson (Garden, xlii. 540–541).

A description of the *Amelanchiers* cultivated in England, accompanied by a colored plate of *A. Canadensis.*

*Larrea cuneifolia e sulle Piante bussola.—Sulla.* G. Archangeli, (Bull. Soc. Bot. Ital., 1893, 46–48).

*Leiophyllum buxifolium.* (Garden, xlii. 559; illustrated).

*Lichenes Epiphylli Spruceani, a cl. Spruce in regione Rio Negro lecti, additis illis a cl Traill in regione superiore Amazonum lectis.* J. Mueller. (Journ. Linn. Soc. xxix. 322–333).

An enumeration of 64 species, with descriptions of new ones in the genera *Lecania, Calenia, Lecidea, Patellaria, Lopadium, Arthronia, Arthroniopsis, Strigula* and *Phylloporina.*

*Liverworts of West Virginia,* A. W. Evans. (Flora of West Virginia, pp. 495–498, reprinted with one plate).

Twenty-eight species are enumerated, including description of

*Plagiochila Virginica*, n. sp. Owing to the severing of Dr. Millspaugh's connection with the W. Va. Experiment station, the catalogue was printed in haste and errors have crept in; the following may be corrected: *Radula*, Dumortier, not Nees; *Jungermannia*, Micheli, not Michaux; *Plagiochila porelloides*, Lindenberg, not Lindberg. E. G. B.

*Mammillaria fissurata*. (Gard. Chron. xii. 789, fig. 130.)

*Mammillaria Radliaria*, n. sp. (Monatsschr. Kakteenk. ii. 104–105; illustrated).

Description of a new species from Mexico.

*Melocactus Brongniartii*. (Monats. Kakteenk. ii. 88; illustrated).

*Mosses of West Virginia* Elizabeth G. Britton, (Contributions from the Herbarium of Columbia College, No. 32. Reprinted from the Preliminary Catalogue of the Flora of West Virginia. pp. 484–494, two plates).

Forty-two genera, and eighty-four species are enumerated, mostly gathered in the vicinity of Morgantown in the month of July, 1892. *Dicranodontium Virginicum* and *D. Millspaughii*, are described and figured as new species, the latter replacing *Campylopus flexuosus*, Sull. (Musci. of the U. S. p. 19 not Bridel.) of the Manual. E. G. B.

*Mountain Region af Clear Lake.—The.* Willis L. Jepson (Erythea, i. 10–16). An account of the flora of the vicinity of this lake, situated in the Coast Range, seventy miles north of the Bay of San Francisco. A number of rare species were secured, and among them two novelties: *Streptanthus hesperidis* and *Arctostaphylos elegans*.

*Musci Americæ Septentrionalis, ex operibus novissimis recensiti et methodici dispositi.* Renault et Cardot (Revue Bryol. xix. 65–96, 1892, continued).

In the preface the authors claim to have arranged according to their alliance 1350 species of North American mosses, but they do not include those of Mexico or Central America. This list does not claim to be a critical revision, but simply an enumeration to date of all the published species since the issue of the Manual, giving their range geographically, also indicating whether endemic or common to both Europe and the U. S. This first part includes 710 species, the varieties not numbered. We note one error

under *Leucobryum*, p. 79, the authors referring *L. sediforme*, Muller as a variety under *L. minus*, Hpe. Either they have misunderstood my statements in the BULLETIN xix, pp. 189–191, or they have recently received material agreeing with Muller's species. We have a portion of this material recently received and entirely agree with Muller that *L. sediforme* does not occur in the United States. E. G. B.

*Novitates occidentales, I.* Edw. L. Greene (Erythea, i. 4–7).

*Pulsatilla multiceps*, *Potentilla scopulorum*, *P. ambigens*, *P. Plattensis*, var. (?) *leucophylla*, *P. Micheneri*, *Sanicula nemoralis*, *S. septentrionalis*, *S. saxatilis*, *Senecio Blochmanae* and *Microseris indivisa* are described as new.

*Opuntia prolifera* (Meehan's Month. iii. 1–2; colored plate).

*Plantago media.* J. Franklin Collins (Gard. and For. x. 622).

Record of the occurrence of this European species at Providence, R. I.

*Preliminary List of the Flowering and Fern Plants of Lorain County, Ohio—Additions to the* Albert A. Wright. (Oberlin College, Lab. Bull. No. 1, Suppl., pp. 11, 1893).

A list of 106 species and varieties additional to those recorded in the list of plants of the same area, published by Prof. Wright in 1889, with some corrections, and a number of changes in nomenclature.

*Preliminary List of the Mosses of Washington County, Pa.* A. Linn and J. S. Simonton (pp. 8, no date [1893]). One hundred species are enumerated.

*Salix balsanifera.* C. S. Sargent (Gard. and For. vi. 28; illustrated).

*Sand-dune Flora of Lake Michigan.* E. J. Hill (Gard. and For. vi. 15).

*Sarracenia—The History of.* M. T. Masters (Gard. Chron. xiii. 11, 12; illustrated).

Dr. Masters gives a very interesting account of the history of our Pitcher-plants, from the time of Lobel (1570).

*Sirobasidium, Nouveau Genre d' Hymenomycetes heterobasidies.* G. de Lagerheim and N. Patouillard (Journ. de Bot. vi. 465–469; two figures).

Description of this new genus with two new species from Ecuador.

*Solanum Seaforthianum.* W. Watson (Garden, xlii. 518, 519; colored plate).

A climbing species, native of the West Indies.

*Teratological Notes.* Marshall A. Howe (Erythea, i. 18, 19).

Record of medium floral prolification in *Leptosyne maritima* and phyllody of pistils in *Trifolium.*

*Umbelliferae—Studies in the Californian—I.* Willis L. Jepson. (Erythea, i. 8–10).

*Angelica Californica*, *Leptotaenia Californica*, Nutt., var. *platycarpa* and *Peucedanum robustum* are described as new.

*Woody Plants of Manhattan in their Winter Condition.* A. S. Hitchcock (pp. 20, Manhattan, Kansas, 1893).

A descriptive list of 48 trees and shrubs. Mr. Hitchcock has followed the code of nomenclature adopted at the Rochester Meeting of the Botanical Club of the A. A. A. S. We note one or two deviations from those rules. *Rhus Canadensis*, Marsh. (1785) is taken as the name of the Canada Sumach, but this is a homonym of *R. Canadensis*, Mill. (1767). *R. aromatica*, Ait. (1789), appears to be the acceptable name. *Symphoricarpos vulgaris*, Michx. (1803), is antedated by *S. orbicularis*, Moench. (1794).

*Undescribed plants from Guatemala—X.* John Donnell Smith. (Bot. Gaz. xviii. 1–7; one plate.)

*Sloanea pentagona*, *Xanthoxylum foliolosum*, *Ouratea podogyna*, *Fuchsia arborescens*, var. (?) *megalantha*; *Hauya Rodriguezii*, *Hauya Heydeana*, *Parathesis micrantha*, *Bumelia pleistochasia*, *B. leiogyna*, *Styrax conterminum*, *Ehretia Luxiana*, *Juanalloa Sargii*, *Tynanthus Guatemalensis*, *Schlegelia cornuta and Ægyphila falcata* are described as new. *Potentilla Donnell-Smithii* Focke, Bot. Gaz. xvi. 3, proves to be *P. heterosepala*, Fritsch. *Juanalloa Sargii* is beautifully figured from one of Mr. Faxon's drawings.

POPULUS ANGUSTIFOLIA, JAMES.

POPULUS ACUMINATA, RYDBERG.